Railway Age

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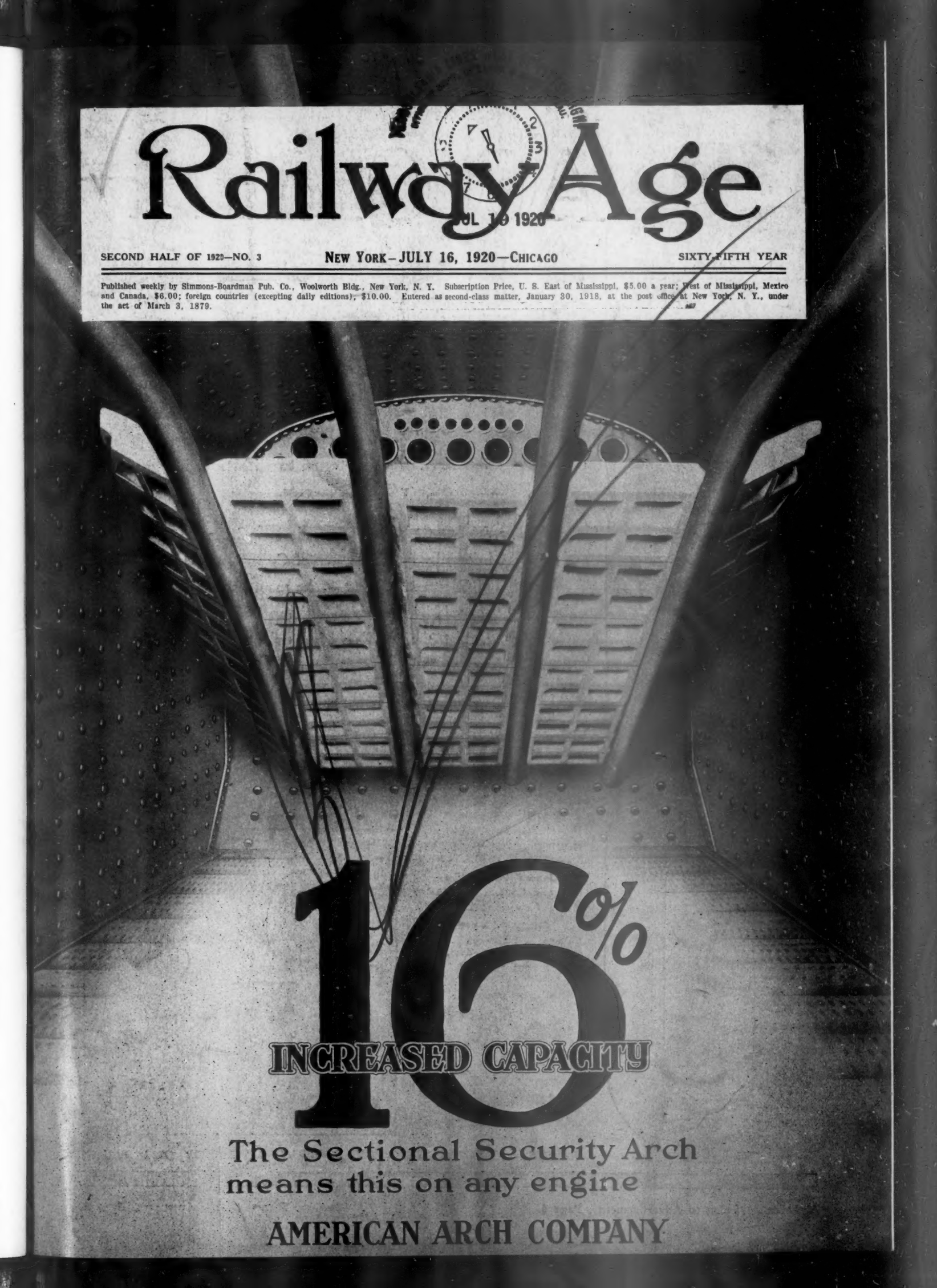

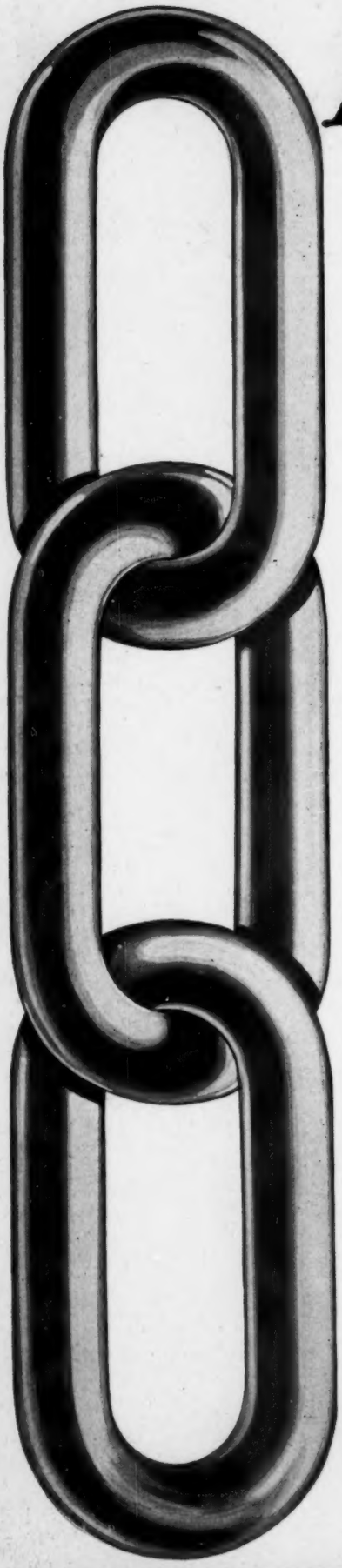

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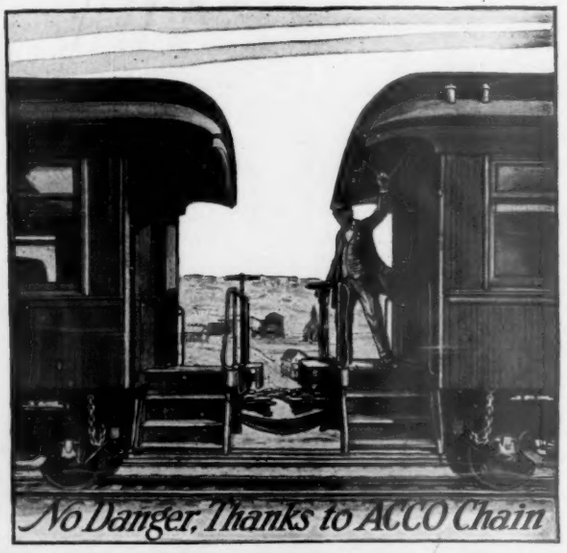

LARGEST MANUFACTURERS OF RAILWAY CHAINS IN THE WORLD

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EDITORIAL
Railway Age

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It Can Be Done; It Must Be Done!

THE CONDITIONS existing in the United States demand a large increase in the amount of freight transported by the railways. There is special need for this increase to be secured throughout the remaining months of the year 1920. It could easily be secured if there could speedily be provided large additional railroad facilities. But it is too late now to add much to the facilities this year. If a large increase in the freight handled is to be made this year it must be accomplished almost entirely with the locomotives, cars, tracks and terminals already in existence. Can it be done?

In the spring of 1917, when the United States entered the war with Germany, the railways, then as now under private operation, were confronted with a similar problem. They had handled in 1916, and were still handling, much the largest freight traffic ever known. The participation of this country in the war was sure greatly to increase and complicate the demands upon them. It was evident that to meet all the demands the railways must individually work more efficiently than ever and that they must co-operate as never before.

They created the Railroads' War Board to bring about the needed increase of individual and collective efficiency. Regardless of all that has been said to the contrary, a greater increase in railroad efficiency was achieved during the nine months the War Board was in charge than in any other equal period, before or since. The record-breaking freight movement of 1916 was completely surpassed. The government had to build cantonments for its soldiers at once, and in a few weeks the railways assembled and delivered 150,000 carloads of materials for this purpose, one of the greatest transportation achievements in history. Under the Railroads' War Board was adopted the system of moving troops which was used throughout the war with such success.

Confronted at present with a problem similar to that they faced under private operation in 1917, the railways have adopted similar plans to solve it. The Advisory Committee they recently have created is similar to the Railroads' War Board in personnel and purposes. Can the railways under this new organization secure improvements in operating results comparable to those of 1917?

The need for increasing the freight handled is almost as great now as it was then. It was needed then to help in winning the war. It is needed now to prevent a coal shortage that would result in many people, especially in the Northwest, suffering severely next winter. It is needed to make possible an increase of production which is essential to prevent very serious social, industrial and financial consequences. It is needed to prevent attacks upon the railroad companies which might destroy confidence in private management and result in government ownership.

The difficulties in the way of increasing the amount of freight transported are even greater than they were three years ago. There has been very little increase in railroad facilities since then. Tracks and equipment, especially freight cars, are in much worse condition. Labor is not as efficient and loyal. The disparity between the amount of traffic actually being handled and the amount demanding transportation is greater.

To say, however, that the amount of freight handled with existing facilities cannot be increased would be to indict the present officers of the railways as incompetent compared with their predecessors and as having lost the ability they themselves have in the past demonstrated. Year by year throughout the history of private operation in this country the railways, always when there was a large traffic, increased the amount handled per locomotive, car, employee, mile of track and mile of line. They can renew this increase of transportation efficiency if they will put into their work the same enthusiasm and initiative, and more than the same amount of co-operation, as in the past.

Daniel Willard is one of the most experienced and able railway operating men in the United States. He said before the Interstate Commerce Commission last week that the average miles per car per day on the railways can be increased to 30 miles. The average in February, the last month of government operation, was only 22.3 miles, and yet with this low car mileage the railways handled 27.6 per cent more freight than in February, 1919. An increase in the average car mileage to 30 miles per day would amount to 35 per cent. This would cause an increase in the available car supply which would revolutionize existing transportation conditions. Mr. Willard set an extremely high standard for the railways; but an improvement in car circulation one-half as great as he named would improve the situation immensely.

As Mr. Willard pointed out, an increase of one mile per car per day would enlarge the available supply of cars by 100,000. An increase of one ton in the amount of freight loaded in each loaded car would enlarge it by 75,000. A reduction of one-half in the number of bad order cars would increase it another 75,000. Probably it is practicable for the railway managers, with the co-operation of labor, the shippers and the regulating commissions, to effect this great improvement. But it will require herculean efforts. Every railway management will have to cause repairs to be made as rapidly as possible to bad order cars. Every railway management will have to inspire the utmost initiative and enthusiasm on the part of all its operating officers in carrying out the detailed supervision of the work of everybody concerned with the movement of cars which will result in keeping every car moving whenever it is practicable for it to move. Every railway management will have to obey the orders of the Commission on Car Service so that the needed redistribution of cars will be secured—there will be no great increase of car efficiency while some railways have excessive amounts of equipment on their lines and others are woefully short of it. Finally, every method that enthusiasm and ingenuity can devise will have to be used to secure the co-operation of regulating bodies, and of shippers and receivers of freight, in causing heavier loading and prompter loading and unloading of cars.

One question which will arise in the mind of every operat-

ing man in connection with this matter will be as to whether it will be possible to get enough labor to do the work needed and whether labor will do the work for which it is paid. The award of the Labor Wage Board will be made in a short time. There is a reason to believe it will be such as to stop interferences with efficient operation by labor disturbances unless there is actually a conspiracy being engineered from some source to prevent efficient operation.

In the absence of labor disturbances the efficiency with which the railways are being operated and the amount of freight that they are moving can be increased. Since it can be, it must be. The future welfare of the railways and of the country imperatively demands it.

Maintenance Costs for Track and Equipment

Even a superficial consideration of the relation between track conditions and wear and tear on equipment will show that poor track is reflected in increased car maintenance. The roadbed may not be bad enough to cause derailments, yet the repeated shock of uneven rails will cause more rapid failure of the car parts. The constant pounding causes waste to settle in the bottom of the journal box and may also cause the babbitt lining in the bearing to spread. These are two important factors in the development of hot boxes. The shocks are transmitted to other parts of the car and necessitate more frequent renewal or readjustment. The reciprocal relation between the expenses for maintenance of way and maintenance of equipment is borne out in the costs reported by roads on which conditions are comparable. At the present time many roads are handicapped by having an unusual number of bad order cars and also a great deal of poor track. There is no question that track conditions are in part responsible for the poor performance of the equipment. While the suggestion that car maintenance could be lessened by giving more attention to the roadbed may be superfluous, it is well to keep in mind that operating conditions during the winter will be very difficult if uneven and icebound track causes an abnormal increase in the necessary repairs to cars.

Put Your (Round) House In Order

Undoubtedly the most unsatisfactory condition created by increasing demands upon impoverished facilities will be found in the engine terminal situation as it exists today on many railroads. How often have mechanical men been called to account for the engine failures that can be traced to inadequate terminals? There is something pathetic in the figure of the roundhouse foreman who sees the locomotives assigned to his care increase in size and complexity year after year without a single new or enlarged facility being added to his roundhouse. The situation of the mechanical officer who must explain failures that are the direct result of inadequate terminal facilities is no less tragic, nor is it at all improved by the fact that he may have pleaded for improved terminal facilities in advance of larger locomotives. On more than one occasion where Mallet locomotives have proved an operating failure and inadequate terminal facilities were wholly to blame, mechanical men were criticised. Locomotive design and even the builders may share the blame for the unsatisfactory performance of a new lot of locomotives when the lack of facilities to provide the necessary care and attention was largely responsible. In justice to mechanical men, in fairness to the operating department and in the best interests of the railroads executives must authorize improvements that will keep the terminals fully abreast of the motive power.

The (Fuel) Saving Grace

Eternal vigilance is the price of fuel economy and it is the fuel bill that may make or break your railroad within the next 12 months. This is far from exaggeration with many railroads facing an actual shortage during the very season that it has been customary to stock coal for the coming winter and with fuel prices that have already soared to the seventh heaven. What are the railroads doing to perpetuate the excellent work of the Fuel Conservation Section? Can any railroad say that it is making as great if not a greater effort to conserve fuel than it did during the days of the Railroad Administration? In the reaction that has followed the return of the railroads to their owners it is a fact that the fuel conservation movement lacks its former punch. Do the railroads appreciate the tremendous significance of fuel efficiency? Do they realize that eternal vigilance is the price of fuel economy?

Try the Torch Test

More than one superintendent of motive power who is under the impression that his locomotives are being maintained in a condition to make a perfect fuel record would get a rude shock if he happened into a roundhouse unawares and held a lighted torch to several of the joints where outside steam pipes emerge from the smokebox of locomotives on which the blower may be open. The chances are that so many of these joints would be found leaking that the torch would be quickly snuffed out. Wherever these leaks exist locomotive nozzles must be restricted to create a draft that will overcome them, and wherever locomotive nozzles are restricted there is fuel waste and diminished locomotive capacity. This experiment was recently tried in an eastern terminal with the result that some 29 out of 32 locomotives selected at random developed air leaks in the front end. The railroad in question has rather prided itself on the condition of its motive power, but in this instance had resorted to the use of cement in place of maintaining either a well-packed or well-designed joint. If you believe this incident to be the exception rather than the rule, try the torch test on several of your own locomotives and the chances are that you will have occasion to refer to some of the constructive suggestions for improving this condition that are published in an article on this subject appearing in this issue.

Equipment for Swiss Electrification

Announcement was made last week that the Swiss Government was to float a $25,000,000 issue of 20-year, 8-per cent bonds in the United States, the proceeds of which are to be spent in this country for material for the gradual electrification of the government railway systems of Switzerland. In so far as scientific development of apparatus is concerned, there is probably little to be learned from this source for American railroads. Swiss trains are comparatively light and the equipment for hauling them would not find an application in the United States. Furthermore, from 15 to 25-cycle alternating current power is used in Switzerland while present tendencies indicate that 60-cycle power will be used generally for transmission systems in this country. The urge behind the Swiss program is due largely to the long tunnels, the heavy grades and the pressing need for fuel. Since the signing of the armistice, the Swiss railroads have not been able to obtain their customary supply of German coal and have had to resort to wood which is at best expensive and ineffective. It is significant of the improvements they ex-

pect to realize that they are willing to pay 8 per cent, a high rate for a long term loan. Other striking features are that the United States is looked upon as a desirable place to purchase this material and that the money is raised in this country which overcomes the objections of the Swiss supply companies to sending money out of Switzerland and obviates the difficulties of the present exchange situation.

Economy in Eliminating Compounds

During the past few years practically the only compound locomotives built have been those of the Mallet articulated type. The supremacy of the simple engine using superheated steam is clearly shown by the discontinuance of the use of compounds in Europe and particularly in France. Clearance limitations are a handicap to proper design and compound locomotives have proved expensive to maintain. The fuel economy attained under favorable conditions is not secured in every day operation. The cross-compound has the least mechanical complication and should be as economical in fuel as any type of compound engine, but roads that have converted them to simple locomotives with superheaters have found the results justified the change. In one case comparative tests showed that the simple engine would handle a larger tonnage in proportion to its tractive effort and used 13 per cent less coal per thousand ton-miles. Reduction in maintenance troubles, increased hauling capacity and greater fuel economy combined form a powerful argument for the conversion of existing compound locomotives.

Intensive Training of Employees

It was found necessary during the war to provide means for intensive practical training on a large scale in order to assure a sufficient supply of efficient workmen and mechanics for our army. The plans were made and put into effect in record-breaking time. Men were given the training quickly in large numbers and with excellent results. The railroads in the present crisis are trying to operate with many employees who have had little training or preparation for the work that they are trying to do. Why not tackle the bull by the horns and install measures for giving these men an intensive practical training which will enable them in a very short time to do much better and more effective work? The army authorities in looking about for experts who could head up the movement called upon several men in the railway and railway supply field. Would it not be well in the present emergency for the American Railroad Association to call upon these men to develop quickly such educational measures as will meet the present situation on the railroads? Eventually such a commission could also advise as to a permanent policy which should be adopted by the railroads for the selection and training of all their employees.

Why the Railroads Should Advertise

Webster's Dictionary defines the verb "advertise" as "to inform, appraise or notify, hence to warn." Accept this definition and the railroads of the nation today have much to "advertise." Under present-day usage "advertising" ordinarily connotes a portion of printed matter circulating through the medium of the press, and many persons think it should be carried on only when one has a commodity the supply of which exceeds the demand. The demand for transportation now far ceeds the supply. These persons might conclude, therefore, that to "advertise" at present would be a mistake. On the contrary, the duty of the carriers to "advertise" is increased. It is important for the railroads to attempt to equalize supply and demand through advertising when the former exceeds the latter; but it is even more important for them to advertise when the demand for such a vitally essential commodity as transportation exceeds the supply, the principal function of advertising at such times being to tell why the demands cannot be met and what efforts are being made to remedy the condition. The railroads should "inform, appraise or notify, hence warn" the public regarding the true facts of the present transportation situation in every way possible. Without such informing and warning of the public false impressions will become prevalent. Widespread public impressions dictate history in a democracy.

Need of Improvement in Block Signaling

The article by W. P. Borland, printed in this issue, is in response to our recent suggestion that he ought to put increased vigor into the publicity campaign which he conducts in the interest of safer methods of block signaling, particularly manual signaling. What he really says, however, is that the railroads themselves know what needs to be done and that they ought to do it. This is true. But the sixty months' record that is here set forth so impressively has been an open book to the whole railroad world; and so far as can be judged by the outside observer, the manual block practice of our railroads generally was no better in the sixtieth month than it was in the first one. Mr. Borland does not say whether he is or is not speaking for the Interstate Commerce Commission; or what, if anything, the Commission plans to do under the sweeping authority in this field granted to it by Section 26 of the Transportation Act of 1920. It would be a very reasonable inference, however, that the article is meant as a warning: clean your own house and thus avoid the embarrassment of having outsiders tackle the job. Government investigations are troublesome and costly, whether embarrassing or not. Mr. Borland calls upon the railroads to do two things: (1) to discover bad practices and (2) supplant the bad with good. This, he says, should not be difficult; a very obvious fact. Moreover, there is only one thing to do, since the first one of the two can be considered as already done.

Trading Locomotives for Oil

Once more the American trader has displayed some of that business acumen which has long been attributed to him as a Yankee trait. Years ago a good pocket knife and a shot gun were the only requirements necessary to complete a bargain. Now, locomotives are bartered by the Baldwin Locomotive Works for quantities of Roumanian oil. The American trader has come to realize that he has something to offer foreign countries and that it will be profitable for him to make considerable effort to build up a large commerce and establish close business relations with European countries, for even though their present financial condition is not all that might be desired, raw materials which find a ready market are quite as valuable as the actual gold and silver. However, beyond this mere completion of a business deal, wherein both sellers have profited, there is also a spirit of co-operation, a willingness to depart from the usual cold and impersonal tactics employed in American business. This was not an affair to be cast aside through fear that a country, struggling to regain its feet after the war, would be unable to pay. A much broader viewpoint was taken; a keener eye saw many possibilities, with the result that Roumania will exchange a part of her abundant wealth in

raw commodities for equipment which at present is necessary to her existence, and will look with friendly eye on the American concern in future dealings. A point worthy of note in the contract regards the possible variation in the price of oil. A sum has been fixed for oil per gallon and Roumania will redeem her treasury bonds given as security according to this price, so that if the price of oil goes higher, which is more than likely, Roumania will be the one to profit. It seems apparent that such an agreement can only be looked upon as exceedingly fair and one in which the bargain driver has loosened his grasp somewhat to permit others to share his gains.

Replacing Obsolete Machine Tools

From June, 1912, to the beginning of government operation the amount of money spent for railway shop machinery in the United States was abnormally low. During the first year of government control a step in the right direction was taken by scrapping a considerable number of worn out machines and replacing them by modern productive tools. Records of the Railroad Administration show, however, that only a small proportion of the recommended renewals were actually made and during the last year of government control, practically no money was spent for this purpose. The cost of making up the deficiency was estimated in an article published in the January 2 issue of the *Railway Age* at slightly over $44,000,000. Competent authorities say that anywhere from 5 to 35 per cent of the machine tools and equipment of almost every railroad shop in the country are obsolete and inefficient. Under such a handicap what commercial manufacturer could hope to meet a competitor's prices! One factor in the solution of the problem, as already intimated in these columns, is to establish reliable cost accounting systems in railway shops; analyze the work done on old machines; and present to the proper authorities accurate figures of present costs and possible savings by replacing worn out equipment. The president and board of directors do not understand mechanical details, but will be vitally interested in net returns. It is up to mechanical department officers to demonstrate the possible returns clearly and forcefully. If, as is often the case, the installation of a new tool replacing an old one will actually save 10 to 20 per cent on the investment after deducting interest and depreciation charges, there are not many railroad officers who will pass up such an opportunity to reduce maintenance of equipment costs.

Henry Ford's New Railroad

Henry Ford has secured such an unenviable reputation as an embryo statesman and publicist that the announcement of the Ford purchase of the Detroit, Toledo & Ironton will be received in different circles with varying reactions. No doubt the occurrence will supply material for every paragrapher and jokesmith on every newspaper in the country, except possibly the Dearborn Independent, which, unlike most of its contemporaries, takes Mr. Ford seriously. Nevertheless, the purchase merits more than mere facetiousness. The Detroit, Toledo & Ironton is an important railroad. It operates a total of 457 miles, of which it owns 418 and operates 39 under trackage rights. Its main line extends from Detroit south to Ironton, Ohio, where connection is made with the Norfolk & Western and Chesapeake & Ohio. Inadequate terminals at Detroit and the fact that it traverses highly competitive territory have, however, prevented it from making the most of this strategic position. The traffic of the road amounts to from 3,000,000 to 4,000,000 tons yearly, of which about 70 per cent is products of mines and about half is received from connections. The road has by no means been a dividend payer and has been in the hands of receivers on more than one occasion, it having been reorganized in 1905 and again in 1914. The reports as to the purchase are to the effect that Mr. Ford expects to rehabilitate the property and use it as an assistance in getting coal to his Detroit plants. The humorists add to this that Mr. Ford will no doubt try out on it some of his ideas as to gasoline motive power and the use of alloy steel for freight cars. Nevertheless, while Mr. Ford seems to have a strong predilection for talking about his fads and fancies, he does have a reputation as an able manufacturer. No doubt he will be able with the immense resources at his disposal to make the road over into a first-class property within a fairly short time, but we fear that he will learn many things about the problems of the railway manager that he has failed to appreciate in the past.

A Great Leak

A shipper, in testifying before the Interstate Commerce Commission, stated that 65 per cent of the freight bills received from the railroads were incorrectly figured. An important road in checking up 1,350 way bills at one of its stations over a period of 45 days detected mistakes with an aggregate undercharge of $4,310. In one month the same company handled approximately 5,255 overcharge claims at an estimated cost of $2,600 and involving the refund of approximately $75,000. Vice-President Green, of the Southern Railway, emphasizes the fact in the June Service Bulletin of that road that the mistakes upward cannot be relied upon to counterbalance or offset the mistakes downwards, since the overcharges are practically always detected by the shippers and must be refunded, while undercharges are seldom reported unless detected by the railroad company. "The careless writing of a name," says Mr. Green, "rendering it illegible or misleading, an error in a route, an omission of 'order notify'; in fact any failure to make an accurate, clear and full record of the shipment may cause serious loss and delay. The failure to transcribe the rate, divisions and extensions correctly will surely cause loss. Misplacing a decimal point may decrease the company's revenue 90 per cent. A perfect way bill is a work of art. You will need to be an artist to make one, but you cannot afford to be less than an artist in anything you do. The company needs artists where you are, and higher up." To develop such artists it is necessary first carefully to select the right kind of men when they enter the service, and then to see that they are thoroughly trained and coached in their work. Is your road doing its full duty in these respects?

Popularize Sound Railroad Investments

Not the least interesting suggestion recently appearing in the editorial columns of the Saturday Evening Post is for popularizing sound investments. The idea is not new, but it is constructive and is particularly applicable to railroad investments because, after all the vicissitudes of late years, railroad investments are sound investments. Some appreciation of this fact is reflected in the steadily increasing number of individual holders of certain railroad stocks and it will be found that much ground has already been broken towards popular-

izing such investments. The subject is timely because, as pointed out by the Saturday Evening Post, the wages of many workers are now too large for saving bank investment only. Nothing is more opportune than the conservation of capital and nothing is more essential to the railroads today than additional capital, or the money with which to refund maturing obligations. Why not supplant the decorum of the investment business and the frigid formality of financial advertising with the same sort of propaganda that has decided us to "see America first." A local bank may spend a lot of money this fall advertising the fact that it is a sound financial institution and that it will pay four per cent interest on deposits. In selecting this bank as a depository for his savings, a mechanic or farmer may be influenced by the bank's street car ad at the very time that this bank is buying the notes of the principal railroad serving the community on a basis to yield seven and a half to eight per cent. It is not suggested that dependence upon underwriting syndicates is a thing to be avoided even if the railroads had the facilities for reaching the individual local subscriber, but it is certain that if sound railroad investments are to be popularized the railroads must do it. It might have been said before the war that this could not be done, but if it was possible to popularize a twenty-billion-dollar investment at less than five per cent, should it not be possible for many railroads to popularize at least a small portion of their investment offerings at current interest rates?

Repairs in Outside Shops

Readers of the *Railway Age* have noticed from time to time in the Equipment and Supplies column, items to the effect that this or that railroad has arranged to have a considerable number of locomotives or cars repaired in builders' shops. The reason for doing this has not been far to seek. No one can deny, nevertheless, that Daniel Willard, chairman of the advisory committee of the Association of Railway Executives, has performed a real service in bringing the matter to the attention of the Interstate Commerce Commission, and to the public, in his pointed remarks (*Railway Age,* July 9, page 71) before that body on July 8. Mr. Willard showed that on March 1, the carriers that had been under federal control reported 6.7 per cent or 153,727 of their cars in bad order, an increase of 25,000 over the number at the beginning of federal control. He also showed that many more cars were in service that were not in proper condition for general merchandise business because of the deterioration of their upper structure. He then drew particular attention to the fact that it was proving better to have the cars repaired in outside shops rather than in railroad shops, where wages were higher, hours shorter and the standard of efficiency much lower because of the abolition of piece work. As he pointed out changes in hours and conditions of employment made under government control have seriously reduced the capacity of the railroad shops. Many railroads are not appreciative of just how much work of this kind has been contracted for by their neighbors in the past few months. The *Railway Age* has reported so far this year orders placed for repair work in builders' shops for no less than 13,400 cars and over 200 locomotives. This is not an entirely new venture for the railroad managements, for they have frequently had cars fitted with steel center sills and locomotives rebuilt in builders' shops in the past. However, under present conditions we are likely to see considerably more of it as the other railroads come to realize how completely Mr. Willard is correct in pointing out the advantages to be gained in getting the work done in this way at this time.

Economizing in Labor

The scarcity and high cost of labor has more and more focused attention upon the necessity of installing machinery for the mechanical handling of materials of all kinds. The application of such machinery has been developed to an extremely high degree in some industries, and with remarkable results in increased production and the lowering of unit costs. There are many fields of endeavor, however, where its possibilities are as great, or even greater, but in which very little progress has been made up to this time. It is significant that the engineering fraternity is awakening to the necessity of a more widespread use of material handling machinery. One evidence of this is seen in the proposed formation by the American Society of Mechanical Engineers of a professional section on material handling. Although only a small proportion of the membership of the society has yet been approached, almost 400 members have expressed a desire to become affiliated with the new section. The railroads should be particularly interested because of the many ways in which such equipment can be used to advantage in their various departments. One of the most spectacular recent applications of material handling equipment in the railroad field was the installation at Cincinnati, Ohio, of a scheme for interchanging l. c. l. freight promptly and economically between the different roads entering that city. This is believed by many to be only the beginning of a large development in this direction. Equally important applications may be made for loading and unloading freight at terminals and in various other ways in several of the departments of the average railway.

Tie Shortage Creates Problem

The maintenance of tracks without adequate materials constitutes a problem of large proportions. This is the problem which the maintenance of way department has faced for several years and is still facing. In no particular has the deficiency in materials been more acute than in ties. The renewals immediately preceding federal control were below normal, while during the two years of government operation the deficiency of renewals exceeded 25 per cent. Now, owing to the disorganization common to all industries, aggravated by that incident to the transition to private management with the decentralization of purchases, tie production is far below normal and many roads, particularly in the Central States, are facing another year of greatly decreased tie renewals. At the same time, the demands of the country for transportation are larger than ever and require that tracks shall not be allowed to deteriorate to the point where speed and safety shall be endangered. Maintenance officers are therefore confronted with the two necessities of (1) securing the maximum possible life from each tie and (2) augmenting their supply by increasing the production of ties locally where possible. The first expedient requires increased supervision to see that ties are not permitted to deteriorate because of unnecessary abuse in handling or in service and that they are not removed prematurely. The possibilities of increased production locally for short periods were demonstrated by the accomplishments of the Railroad Administration in certain areas where it was shown that local officers can frequently increase production greatly by coming in personal contact with owners of wood lots along their lines. Pending the receipt of more ties, traffic must be carried expeditiously and safely. This places an added responsibility on maintenance officers, who must insure that every precaution is taken to prevent undue weakening of the track structure.

Business Handled by Railroads Still Increases

THE NEWSPAPERS are full of reports regarding industries that are operating at much less than their maximum capacity, or are on the verge of having to close down, because of the inability of the railways to handle all the traffic offered to them. Reports continue to be received regarding hundreds of millions of bushels of grain which are being held on the western farms and in the country elevators because the railways cannot haul it away.

The uninformed might conclude from these reports that, as the advocates of government management charge, the railways have "broken down." Meantime, the incontrovertible facts continue to show that the railways, in spite of strikes and other disturbances, have been almost continuously in the year 1920, and still are, moving more freight than in the year 1919. For the first time since the roads were returned to private operation it is possible this week to give statistics regarding the amount of freight handled for a considerable period by all the large railways in the country. Statistics regarding freight movement which we recently have published have not included the returns from the Pennsylvania and a few other large systems. The figures now available, which are based on reports made by the individual railways to the Commission on Car Service, show that in the week ended June 19 the number of cars of revenue freight loaded was 869,142, as compared with 807,907 in the same week of 1919. In the week ended June 26 the number of cars of revenue freight loaded was 869,350, as compared with 845,684 in the same week of last year. In the four weeks ended June 26 the total number of cars loaded was 3,405,500, as compared with 3,237,406 in the corresponding weeks of 1919.

The statistics of the United States Geological Survey regarding the movement of coal tell the same story. The number of tons of coal produced and moved by the railroads from January 1 to June 26, 1919, was 210,640,000, while in 1920 it was 251,953,000, an increase of 41,313,000 tons.

The railways this year have had many things to contend with, including a series of strikes in their terminals, and an excessive number of bad order cars which are a heritage from government operation. Nevertheless, in the first six months of the year they moved more freight of all kinds than ever before in the first six months of any year except 1917 and 1918. In January, February and March the amount of freight moved broke all records for those three months, and probably the same thing would have been true in April, May and June if it had not been for the railroad strikes. When all the statistics are available the indications are they will show that even in May and June, in spite of the strikes, the roads handled within ten per cent as much freight as the largest amount they ever moved in those two months.

Why, in the face of these facts, are the industrial operations of the country being seriously interfered with and its financial stability threatened by insufficient transportation? There can be only one rational answer to that question. The present conditions are partly due to the strikes, but they are mainly due to the fact that for years the productive capacity of the country has been rapidly increasing, while the facilities and capacity of the railroads have been increasing hardly at all.

Many persons, including some government regulating officials and business men, are now criticising the railways because they don't handle more business. We believe there is some ground for criticism. We believe the railway managements, by co-operating better together and more intensively supervising operation, can, and should handle more business. But present conditions are principally chargeable to governmental authorities and business men, who, throughout the years from 1906 to 1917, by fighting to keep the rates and net earnings of the railways on the lowest possible level, did all they could in their respective ways to make it impossible for the carriers to handle the country's commerce. Apologies for what they did to create the present conditions would come with much better grace from them than criticisms of what the railway managers are doing, or failing to do. If they had given some heed to the facts presented, and the arguments and predictions made by the railway managers in the past, the transportation conditions of the present would not exist.

Yard Operation and Freight Car Efficiency

THE RAILWAYS are facing the necessity of increasing the efficiency of their operation to the point that they will be able to handle with the equipment now available a business considerably heavier than that with which they are now struggling. This means securing increased service from every car. The average daily mileage secured from all freight cars in 1919 was only 23½ miles. In his statement before the Interstate Commerce Commission last week (published in the *Railway Age* of July 9, page 71) Daniel Willard said this can be raised to 30. The importance of such an improvement can best be seen when it is realized that each mile added to the average freight car movement of the country is equivalent to placing 100,000 additional cars in service. The needed increase in miles per car per day can be secured only by the use of various means which we plan to discuss from week to week.

It cannot be secured to any considerable extent by running trains faster on the road, for although some improvement may be made here, the average freight car spends only one hour per day in road movement and is standing still the remainder of the time on shipper's sidings, on public team tracks, in shops, or in yards. While in yards, the car is exclusively in charge of the railways, and they are responsible for any delays in its movement that occur there. That improvement in yard movement is possible has been made evident in a striking manner in nearly every large terminal in the country during the recent outlaw strikes by the fact that in numerous instances volunteer crews of inexperienced men, usually undermanned, have handled more cars than regular crews. This result cannot be charged alone to malingering by the regular employees. It also reflects a lack of supervision and of efficient planning of operations to secure the desired results with the minimum effort. When inexperienced men, unfamiliar with the routine of yard operation, can effect such improvements, the possibilities of expediting operations by thorough, analytical studies to eliminate lost motion, supplemented by experienced forces, is evident.

One difficulty has been that neither terminal facilities nor supervision has kept pace with the increase in traffic, with the result that those in immediate charge of operations have become deluged with details in handling an overworked plant and have been forced to follow the lines of least resistance. The evils of inadequate facilities cannot be corrected in any large measure in the immediate future, but supervision can be increased and improved. The terminals are now the points of congestion and the places which principally limit the capacity of the roads. The ability of the carriers to handle more traffic depends largely on faster movement of cars and the place where their movement can be most stimulated is in the yards. No operating officer can say that he has done his utmost to help solve the present acute railway problem until he has personally assured himself that the terminals under his supervision are being operated with maximum efficiency. Nothing will contribute more to increased car mileage than this.

New Grain Unloader Saves Time at Elevators

This Labor Saving Facility Also Opens Car Doors Without Injury or Any Loss of Time

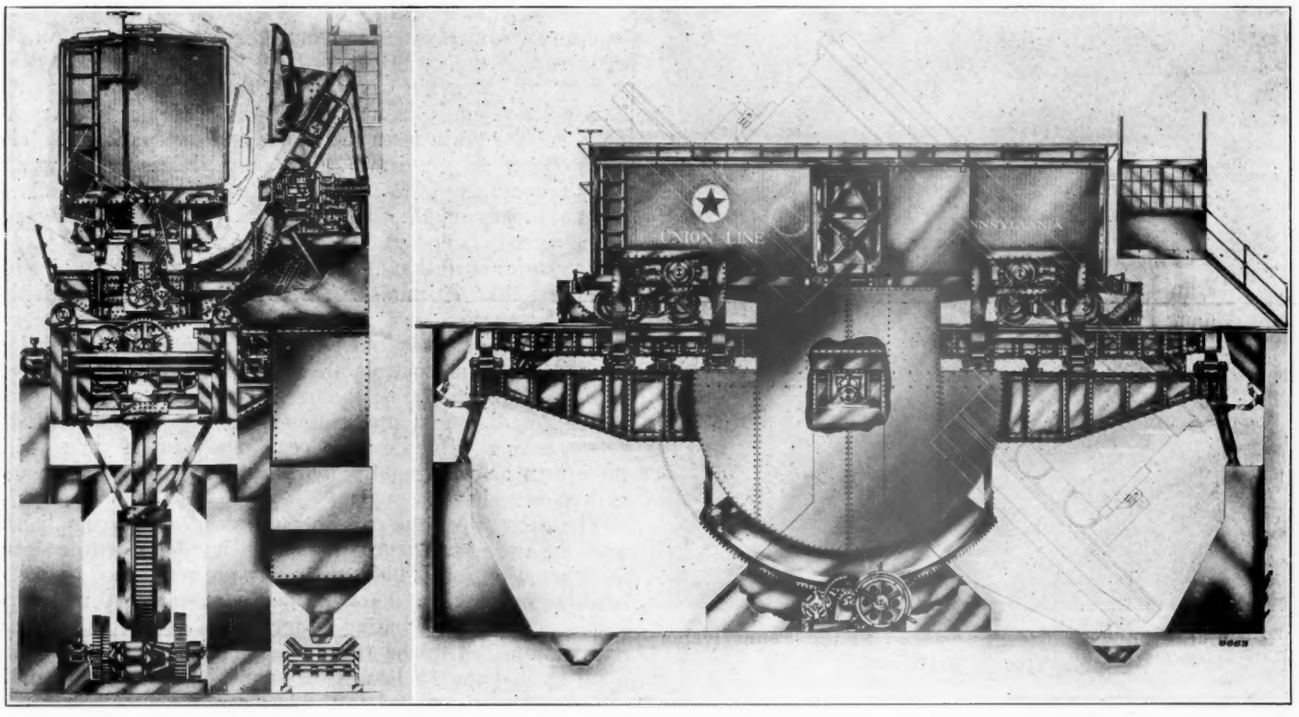
TAKING THE suggestion from the car tippers for unloading and loading coal and coke, the James Stewart Company and the Link-Belt Company of Chicago, have developed a machine that will empty box cars loaded with grain quickly and with a minimum amount of labor. Four machines of this type, which are known as the Stewart-Link Belt grain car unloaders, have been installed in the new Northern Central elevator of the Pennsylvania Railroad at Baltimore.

Heretofore in unloading grain, the grain car doors have been removed by hand, the grain shoveled out of the cars with power shovels and the car then swept out. The unloading of the average car required the services of four men for approximately 45 minutes during which operation approximately one-third of the grain car door is destroyed in removing by means of pinch bars and axes.

The new machine embodies an appliance for opening the grain doors automatically. With the new car unloader the grain door is forced inward and clear of the grain while the car is being tipped sidewise, without any loss of time or injury to the car or the grain door. The fact that grain doors can be removed without injury is of no small importance to a railroad since it is estimated that the average loss through lumber destroyed in opening a grain door according to prevailing methods is from $1 to $2.

The machine consists of a sidewise-tipping cradle mounted on an endwise tipping table. A third feature of the device is the grain receiving hopper placed on one side of the tipping table. The object of the equipment is to tip the car on its longitudinal axis 30 deg. toward the side on which the receiving hopper is located and force the door open. This causes the grain near the car door to run out; then, with the car still in this position, it is tipped endwise 45 deg. by the table, first with one end up and then the other, so that the grain in the ends of the car will run out.

The tilting cradle consists of two structural steel girders to support the track rails, these girders in turn being carried on rocker-shaped supports which rest on trunnions attached to the top of the end-tilting table. The end-tilting table consists of structural steel girders supported on the transverse center line by a 13-in. steel shaft mounted on concrete piers, this shaft and its fittings being of sufficient strength to support the table, cradle and loaded car as they are being tilted about the axis. To hold the table in the horizintal position for the purpose of running the car on the cradle, it is equipped with end supports in the form of structural steel struts which are released and thrown clear of the table by means of the toggles shown in the illustration. Attached to the underside of the tilting table by means of structural steel framing is a large circular segment equipped with a rack which meshes into a pinion connected by a train of gears to a motor for operating the table. A similar arrangement operates the side-tilting cradle.



Two Diagrammatic Views of the Grain Car Dumper, Indicating the Tilted Positions by Dotted Lines

The side-tilting cradle mentioned above is equipped with a number of auxiliary devices which play an important part in the operation of the car unloader. One feature is a pair of end clamps which engage the couplers of the car for the purpose of taking the thrust of the draft rigging when the car is up-ended. Another important function of these clamps is to center the car automatically on the table. When not in use those end clamps drop into a depression between the two track girders of the cradle. There are also two side bolsters to take the side thrust of the car when it is tipped sidewise. These consist of structural steel framework, em-

bodying extensions of two of the rocker frames. Each of these supports a motor-operated screw jack or ram placed in a horizontal position and capable of exerting a pressure against the frame of the car.

The grain door opener is mounted on top of the receiving hopper on the end-tipping table and moves with it. It is essentially a ram mounted on a suitable frame designed to push against the grain door. It consists of a main frame containing the operating mechanism which moves the main frame towards or away from the car door. On the face of this frame is mounted the door pusher frame. This is the device that engages the car door. It is hinged onto the main frame at a point about 4 ft., 6 in. above the level of the car floor. The face of the door pusher is studded with small steel points which hold the door firmly.

Attached to and a part of the pusher door frame is the deflector which consists of two sector plates mounted vertically on the back and in the center of the door pusher frame with a third plate running in guides between the two sector plates. This third deflector plate is counterweighted. The door pusher frame is also counterweighted so that when

View of the Four Unloaders Installed at the Pennsylvania Elevator in Baltimore

enough grain has run out of the car to clear the grain door, the door pusher frame will swing inward and upward and the third deflector plate will drop to the car floor. When the car is brought back to normal this third deflector plate is raised automatically to its upward position by the motion of the car. The use of this deflector plate enables the machine to be operated more rapidly as it causes all the grain in the upper end of the car to run out of the doorway.

The receiving hopper has a capacity of 1,000 bu. of grain and consists essentially of a steel plate drum of semicircular shape, the axis of the tipping table. This drum, being designed to turn with the table, is arranged to fit inside of a second stationary hopper that has an outlet at the bottom directly over a grain belt, the object of this arrangement being to deliver the grain accurately and continuously to the belt, no matter in what angular position the receiving hopper may be.

Five electric motors are provided to actuate the various functions of the apparatus, the controllers of these motors being located in an operator's house placed over the receiving hopper and are interlocked so that they must be operated in the proper sequence. After the car has been run on the cradle, Motor No. 1 brings the end clamps in contact with the couplers. Then Motor No. 2 actuates the jacks of the side bolsters until the head of each is in contact with the side frame of the car. The third motor then brings the grain door opener in contact with the door, with its lower edge resting on the floor of the car in the doorway. When this operation is completed the fourth motor tips the cradle so that the car is tipped sidewise.

In the meantime the grain door opener has held the door (and the grain immediately behind it) in the same position as when the car was still vertical. The effect of this was to move the car away from the door or, in other words, push the door into the car. After enough grain has run out to clear the grain door, the pusher swings the door about its hinge and brings it near a horizontal position inside the car. The deflector plate drops in the car underneath the door with the bottom of the deflector in contact with the inclined surface of the car floor. When this operation is completed, Motor No. 5, attached to the rack on the end-tipping table, is brought into action, elevating one end of the car. As the grain in this end of the car flows to the center it strikes the deflector and pours out of the door. When the grain in the high end is gone the motor is reversed, tipping up the other end of the car.

After all the grain has run out, the car is brought to the level position and a man enters the car with an air hose and dislodges the grain from the lining and sweeps it out. The door opener is withdrawn, this action releasing the grain door and causing it to fall to the floor of the car. Following this operation the first and second motors are reversed, releasing the clamps so the car may be run off the table.

The entire operation of unloading a car with this unloader takes less than 10 min. An empty car will go through the cycle of operation in 3 min. Only three employees are required to operate the unloader and attend the car during the process. One controls all operations from the operator's cage, one is stationed at the car door and the third attends to the coupling and uncoupling of cars. In other words, this machine will accomplish as much in 10 min. with three men as will require four men 45 min. with the use of a power shovel.

The delivery of the cars to the unloader is accomplished with the use of a Barney which will handle 15 loaded cars in either direction. The empty cars are run away from the machine by gravity. Each Barney is operated by means of endless cable and winding drums and has a standard car coupler attached to the front end. The Barney is run into a pit so that the 15 loaded cars can be run in ahead of it and the Barney coupled to the last car.

Photograph from Underwood & Underwood, N. Y.

Traveling on the Trans-Siberian

Manual Signal Statistics and the Accident Record

Impressive Five-Year Record of Collisions—Railroads Called Upon to Take Action

By W. P. Borland,
Chief, Bureau of Safety, Interstate Commerce Commission

AN EDITORIAL entitled "Block Signal Mileage 1920" in the *Railway Age* of June 11, commenting upon the annual table of block signal statistics recently published by the Interstate Commerce Commission, says that there has been a gratifying increase in the use of automatic block signals during the war period, but that further increase is uncertain and retarded by existing unsettled conditions; and that non-automatic block signals are often operated under inadequate or loosely administered rules. A suggestion previously made in the editorial columns of the *Railway Age* is repeated, namely, that the commission should—

"report more in detail concerning the use of the block system on American railroads, what practices are good, what are bad; and how, and where, and to what extent good practices are driving out the bad. The reports which have been made on numerous collisions have indicated the need of such a study and review. The annual statements are illuminating as regards quantity; let us turn for a time to the question of quality."

To some extent the desired information is already available. In one table in the statistical bulletin referred to, the practices employed in the operation of the non-automatic block system are classified, particularly with reference to permissive blocking. The report shows that the non-automatic block system was in use on 63,915 miles of road January 1, 1920; that on 4,235 miles of road permissive signaling was forbidden by the rules, for all trains, various methods being employed for authorizing permissive movements in the remainder of non-automatic block territory. The tables indicate that permissive signaling is allowed on 59,680 miles of road operated by the non-automatic block system; but on approximately 36,890 miles is not permitted for movements involving passenger trains.

The American Railway Association defines "block system" as "a series of consecutive blocks;" according to the Signal Dictionary it is "the method of regulating the movement of railway trains, so as to maintain an interval of space between trains moving in the same direction (on the same track)." In the Commission's orders calling for annual block signal statistical reports the term "block system" is defined as any method of maintaining an interval of space between trains, as distinguished from the time-interval system.

From an operating standpoint the practice of permissive blocking cannot be condemned wholesale; but when the practice is followed indiscriminately and without proper safeguards, the block system itself is virtually nullified. As suggested in the editorial referred to, railroad officers themselves, in compiling their reports, are sometimes in doubt whether the methods and practices followed on their lines in the operation of trains constitute the block system; and each year, in the compilation of these statistics inquiries are necessary in some cases to determine whether as a matter of fact the block system in any form is used, or whether the method of operation reported as the block system has been modified by rules, bulletins and operating practices to such an extent that the reporting carrier cannot properly be credited with having the block system in use on its lines. And in accident investigations conducted by the Bureau of Safety it is necessary to devote considerable attention to rules and practices found to be in effect under the non-automatic block system. In certain cases these investigations have disclosed the existence of unsafe rules and authorized methods of operation which, to say the least, are questionable; as well as the prevalence of practices contrary to the rules which have grown up in service; and, also flagrant disregard of block signal rules.

The suggestion is timely that attention be centered upon the quality of the block system employed by each carrier on its line. But this should be done in the first instance by the carriers themselves, not only for the purpose of determining what practices are good and what bad, but also for the purpose of supplanting undesirable by safe and efficient practices. That dangerous conditions and practices exist under the non-automatic block system has too often been demonstrated by the occurrence of disastrous collisions. It should not be difficult for responsible supervising and operating railroad officers to ascertain accurately the practices followed on their lines, and promptly to correct dangerous conditions or practices which investigation may disclose.

A large volume of illuminating information bearing on this subject is already available in the form of accident investigation reports which are made public by the Commission from time to time and published in condensed form in the quarterly accident bulletins and summaries. The accompanying tabulation sets forth instructive facts with reference to certain collisions occurring in non-automatic block territory which have been investigated by the Bureau of Safety. Since this work was begun in 1911 the Commission has investigated about 60 collisions of this class. The reports concerning cases which happened since January 1, 1915—five years—are abstracted in the table. The column headed "cause" affords an indication of the circumstances and practices which led to these accidents.

Some of the more recent accidents of this character may be referred to somewhat more in detail as follows:

1.[1]—Rear collision of freight trains; caused by failure of engineman to operate his train under proper control while running on a caution card. The following train entered the block section, which was 24.5 miles in length, 1 hour and 5 minutes behind the first train, with a caution card stating that the block was not clear. The only definite information conveyed to the engineman of the following train by this caution card was that at that particular time there was a train ahead within a distance of the length of the block, 24.5 miles.

2.[2]—Rear collision of freight trains; caused primarily by failure of engineman to operate his train under proper control within yard limits. Under a manual block rule, when a preceding train has been reported as inside the outer switches of certain stations named in the time-table a clear signal may be given to any following train except a passenger train; a passenger train entering the block under such circumstances is required to have a permissive card, form C, which reads "Proceed, expecting to find a train in the block between this station and ———." Under this rule a train may receive a clear signal indication or a clearance card stating that the block is clear when as a matter of fact at certain stations the block may be clear only

[1]N. Y., N. H. & H., Pomfret, Conn., April 10, 1918.
[2]C., M. & St. P., Farmington, Minn., March 4, 1920.

NOTES ON CERTAIN COLLISIONS OCCURRING IN NON-AUTOMATIC TERRITORY, INVESTIGATED SINCE JANUARY 1, 1915

Explanation of heading: C, Kind of accident, Rear collision (rc), Butting collision (bc) or Crossing collision (xc). KT, Kind of train, Freight (F) or Passenger (P). K, Killed. I, Injured. T, Number of main tracks.

Date	Road	Place	C	K.T.	K.	I.	T.	Causes
1915								
Feb. 2	Pennsylvania	Irving, N. Y.	rc	F&F	1	6	1	Failure of conductor and flagman properly to protect train; failure of engineman properly to control speed after exploding torpedoes when running on permissive signal indication.
Mar. 5	Wabash	Garber, Ill.	bc	F&Work	1	10	1	Failure of crew of extra and of despatcher to keep train clear of main track on time of superior train; extra running against opposing superior train without proper protection; wires being down, despatcher instructed crew to run carefully prepared to stop if any opposing trains appeared.
Jan. 27	Chic. R. I. & P.	Platte River, Mo.	bc	F&F	4	1	1	Failure of conductor and engineman to keep their trains clear of main track on time of superior train; failure of two operators to comply with manual block rules.
Jly. 29	C. R. I. & P.	Mickles, Ark.	rc	P&F	2	6	1	Failure of conductor to know that freight train was properly proteeted; crew of passenger train had received block-restriction card advising them of time two freight trains entered block.
Aug. 1	C. R. I. & P.	Waveland, Ark.	bc	F&F	..	8	1	Failure of crew to obey a wait order; failure of crew of other train to clear superior train 5 minutes; both trains in block under clear signal.
Aug. 12	B. & O. S.W.	Orient, Ohio.	rc	P&F	6	125	1	Failure of engineman of freight train to have train under control while following passenger train in block; failure of conductor and flagman of passenger train properly to protect same.
Sep. 24	Missouri Pac.	Plattsmouth, Neb.	bc	F&F	3	25	1	Failure of crew of passenger train to obey meet order at station within limits of block section.
Oct. 19	Kansas City So.	Kansas City, Mo.	bc	2 Locos	3	3	1	Engine allowed to enter occupied block, due to error of despatcher or of operator.
Nov. 2	Ches. & Ohio.	Keswick, Va.	rc	F&F	3	..	1	Failure of crew to run in occupied block as required by caution card, and their failure to observe time-card speed-limit rule when engine was moving backward.
Nov. 26	Wabash	Morris, Ind.	rc	F&F	2	2	1	Failure of engineman properly to control speed while running in occupied block under a caution card.
Dec. 24	T., St. L. & W.	Veedersburg, Ind.	bc	P&F	4	21	1	Failure of operator to copy train order correctly; operator gave passenger train caution card, stating that block was clear, without first communicating with operator at other end of block.
1916								
Feb. 15	Seaboard A. L.	Franklinton, N. C.	rc	P&F	1	35	1	Failure of conductor and engineman to keep engine clear of main track on time of superior train; failure of brakeman properly to deliver to engineman instructions entrusted to him by conductor.
Mar. 4	Ch.St.P.M.&O.	Mtn. Lake, Minn.	rc	F&F	4	3	1	Failure of engineman to have train under control approaching station, running on caution card.
Jun. 15	Hocking Valley.	Fostoria, Ohio.	xc	Ex&F	1	..	1	Failure of engineman to have train under control a sufficient distance from crossing of another railroad to prevent his train from striking train occupying crossing.
Jly. 21	Norfolk & W.	Belspring, Va.	rc	F&F	2	5	1	Failure of engineman to have train under control; failure of conductor and flagman to protect by flag; error of operator in issuing clearance card indicating block to be clear.
Aug. 9	Southern	Croswell, S. C.	bc	P&F	1	4	1	Failure of trainmaster, acting as engineman, to have freight train under control approaching meeting point.
Aug. 15	Balt. & O.	Washington, Pa.	bc	F&F	3	8	1	Failure of crew to obey train order fixing meeting point within limits of block section.
Oct. 15	Chi. Bur. & Q.	Smithfield, Neb.	rc	F&F	11	14	1	Failure to protect by flag; following train received caution card upon entering block 72 miles in length.
1917								
Jun. 13	N.Y.,N.H. & H.	Westfield, Mass.	rc	F&F	1	3	1	Failure of engineman properly to control speed of his train within yard limits; was running on caution card.
Jun. 13	A., T. & S. F.	Flynn, Okla.	bc	P&F	2	72	1	Failure of crew of passenger train to obey meet order at point within block section.
Jun. 30	Seaboard A. L.	Kittrell, N. C.	bc	F&F	4	2	1	Failure of operator to display stop signal and deliver train order changihg meeting point.
Jly. 16	L. & Nash.	Nashville, Tenn.	rc	F&F	1	..	2	Failure of flagman properly to protect train; failure of conductor to see that train was properly protected; question as to whether caution block signal indication was displayed.
Aug. 1	Norfolk & W.	Rippon, W. Va.	bc	F&F	2	41	1	Failure of engineman to obey meet order; error on part of operator in changing block signal from stop to clear position.
Aug. 8	N. Y. Central.	Geneva, N. Y.	xc	2 Locos	1	1	1	Failure of engine crew to obey signal indications; fixed signal so arranged as to make hand signals frequently necessary.
Aug. 16	M., Kan. & Tex.	Watauga, Tex.	bc	P&F	2	12	1	Failure of crew to provide proper protection when occupying main track on time of superior train; failure of passenger engineman to operate train under proper control when running on caution card.
Aug. 23	C.C.C. & St. L.	Mansfield, Ill.	rc	P&F	1	24	1	Failure of engineman to stop train at crossing as required by special order and his failure to observe and obey stop signals given by Flagman due to being asleep; block system not used at night.
Sep. 1	Great North.	Havre, Mont.	bc	F&F	2	4	1	Despatcher permitted train to enter block already occupied by another train; staff system.
Dec. 12	Col. & South'n.	S. Denver, Col.	rc	P&YdEn	..	20	1	Switch engine occupied main track without authority or proper protection; failure of engineman of passenger train to obey rules regulating speed within city limits.
Dec. 14	Southern	Calhoun, S. C.	bc	P&P	2	18	1	Failure of operator to deliver copy of right of track order; failure of despatcher to have operator make sufficient copies of order and obtain conductor's signature; misunderstanding between block operators.
Dec. 19	C. R. I. & P.	Amity, Mo.	rc	F&F	2	1	1	Failure of conductor properly to protect rear of train; failure of conductor to make sure it was properly protected; operator allowed train to enter occupied block without caution card.
1918								
Jan. 30	Norfolk & W.	Dublin, Va.	bc	F&F	4	4	1	Failure of conductor properly to check train register; error in issuing clearance card to extra train, permitting it to occupy block without notifying operator at next block.
Apr. 10	N.Y.,N.H. & H.	Pomfret, Conn.	rc	F&F	4	3	2	Failure of crew to operate train under control after receiving caution card stating that block was not clear; block 24 miles in length.
Apr. 25	C. B. & Q.	Bayard, Neb.	rc	F&Wk	6	2	1	Failure of flagman of work train properly to protect; failure of engineman of freight train to have train under sufficient control, to obey stop indication of train-order board.
Aug. 4	Balt. & Ohio.	Bridgeville, Ohio.	bc	F&F	1	1	1	Error of operator in copying train order and improper acceptance of order by conductor and engineman; meet order did not include words, "Take Siding."
Sep. 10	C. B. & Quincy.	Birdsell, Neb.	rc	P&Wk	11	4	1	Work train occupying main track on time of superior train; passenger train not running under control in occupied block.
Oct. 4	Erie	Red House, N. Y.	rc	F&F	2	2	2	Failure of engineman to operate train under control after passing signal in caution position.
Nov. 23	Pennsylvania	Dewart, Pa.	bc	F&F	6	5	2	Failure of operator to deliver train order.
1919								
Jan. 11	Balt. & Ohio.	Maynard, Ohio.	bc	F&F	1	8	1	Failure to obey a wait order; block card as received by engineman was not legible and he did not have copy of meet order; conductor forgot order.
Feb. 26	Gr. Rap. & Ind.	Cadillac, Mich.	bc	P&F	2	23	1	Failure of engineman to observe and obey stop signals given by flagman; block system applies to following movements only.
Mar. 1	N.Y.,N.H. & H.	Touisset, R. I.	bc	P&Wk	1	34	1	Failure of flagman of work extra to obey instructions to hold all trains; block system applies to following movements only.
Mar. 6	Pennsylvania	Heaton, Pa.	rc	F&F	4	2	2	Failure of engineman to operate train in occupied block under proper control; failure of flagman properly to protect his train.
Sep. 1	Del. & Hudson.	Carbondale, Pa.	rc	F&2 Eng	1	..	2	Failure of leading engineman to operate engine under proper control rounding sharp curve in occupied block.
Dec. 22	Wabash	Huntsville, Mo.	rc	P&F	1	15	1	Freight train occupying main track on time of superior train without proper flag protection; failure of engineman of passenger train to operate train under proper control in an occupied block.

as far as the outer switch, with a train occupying the main line inside of the outer switch, still within the limits of the block section for which a clear indication has been given; furthermore, under the rules in effect the question of whether the block is considered clear or occupied depends on the classification of the train which is about to enter the block.

3.[3]—Rear collision between a freight and a passenger train; caused by the freight train not being properly protected by flag and by the passenger train not being operated under proper control when running on a caution card. The freight train had entered the block running on a caution card, and near the leaving end of the block was flagged by a preceding freight train. In the meantime the passenger train was authorized by the despatcher to enter the block, also on a caution card; was run at an average speed of 50 miles an hour, and collided with the freight train when that train reduced speed on account of having been flagged. The manual block rules of the railroad on which this collision occurred provide for an absolute block ahead of and behind passenger trains except in closing up at stations "or for other equally good reasons, and then only under safe conditions." The despatcher stated that the provision made by rule for an absolute block was required to be observed only in the case of a train following a passenger train. The accident occurred on the 22nd day of the month and during this period of 22 days the average number of caution cards issued daily had been nearly 40.

4.[4]—Rear collision of two freight trains; caused primarily by failure of engineman to operate his train under proper control during foggy weather after receiving a caution signal indication. A manual block rule required use of caution cards, but the despatcher stated it had been decided that a caution card was not necessary in addition to the block signal indication and in order to avoid congestion of traffic the use of caution cards was abandoned. Specific instructions had been issued by the superintendent, on account of a previous accident, that the use of permissive block-signal indications in foggy weather was strictly contrary to instructions and that under no circumstances was an operator to allow a train to enter an occupied block during a fog unless in possession of a message signed by the train despatcher. At the time the two trains involved in the accident entered the block it was occupied by a third train and although there was a question as to whether the despatcher was at that time advised of the weather conditions, he stated that he usually left to the enginemen the matter of proceeding under a caution block signal indication in foggy weather, as they were better acquainted with the existing weather conditions.

5.[5]—Butting collision between an equipment train and a mail and express train; accident caused primarily by equipment train being authorized to run against the current of traffic in an occupied block; contributing causes were failure of assistant yard-master and a switchman to furnish proper flag protection. The northbound main track at the station was obstructed, making it necessary for northbound trains to use the southbound track to a crossover near the yard limit board. The southbound mail and express train, which was superior to all trains regardless of class or direction, had entered the block section under a clear signal indication and with no knowledge that the track at the end of the block was being used by opposing trains, although the fact that it was going to be used by the northbound equipment train involved in the accident was known for about 50 minutes before the mail and express train entered the block. The northbound train was operated against the current of traffic a distance of nearly 1 mile on the time of the superior train without any attempt to comply with a manual block rule that when a train is to obstruct the other track the signalman shall notify the trainmaster and obtain authority to issue a crossover card; this crossover card requires the crew of the train receiving it to protect by flag before making the crossover movement. Movements of the kind involved in this accident were not uncommon, but the evidence indicated that crossover cards were not used, while the officers, including the superintendent and the general superintendent, believed that the issuance of caution cards to either train was unnecessary, the only safe way of making such movements being under "proper" flag protection.

6.[6]—Butting collision between a passenger train and a work train; accident caused by work train occupying the main track on the time of the passenger train without flag protection. At the entrance to the block the crew of the passenger train received a caution card stating that the block was not clear, and a permissive card directing them to proceed expecting to find a train in the block, which was 11.5 miles in length. The passenger train attained a speed of 45 miles an hour, which was the speed limit for passenger trains, and according to the speed recorder was traveling at the rate of 34 miles an hour at the moment the collision occurred. The engineman's understanding as to how to operate his train under a permissive card was that the engine crew would keep a sharp lookout, and keep the train moving in good shape. The accident, however, occurred in a cut on a curve which led to the left for the passenger train and the fireman was engaged in shoveling down coal in the tender. The engineman's understanding of the purpose of the permissive card was that it merely gave notice of a train being in the block and he said that he would look for a flag or some other indication of that train. The engineman also stated that fomerly when running under a permissive card it was customary to reduce speed at points where the view was obscured; but this resulted in losing time and instructions were issued to proceed and watch out for a flag. There was nothing in the rules of this railroad company which stated how a train should be operated when running under authority of a permissive card.

Many of the practices referred to are not believed to be isolated or exceptional; similar practices and conditions can no doubt be found in effect on many lines at the present time, and corrective measures should be taken promptly. A considerable number of the accidents referred to in the foregoing may properly be classed as preventable, and it is entirely reasonable to expect that proper action at this time by responsible railroad officers will avert similar disastrous accidents in future.

[3]Wabash, Huntsville, Mo., December 22, 1919. (*Railway Age*, March 26, 1920, page 1023.)
[4]Erie, Red House, N. Y., Oct. 4, 1918.
[5]Missouri Pacific, Texarkana, Ark., March 18, 1920.
[6]C., B. & Q., Birdsell, Neb., Sept. 10, 1918 (*Railway Age*, Dec. 6, 1918, pages 985 and 1018).

The Italian Railway Strike—Locomotive Guarded by Soldiers

Railroads Handling Large Volume of Freight

WASHINGTON, D. C.

THE WEEKLY REPORTS received by the Commission on Car Service of revenue freight loaded and received from connections continue to show large increases in the volume of traffic handled by the railroads as compared with the corresponding weeks of 1919, although the totals are still behind those for 1918. Whereas the reports heretofore published have been incomplete because the Pennsylvania system and several smaller roads failed to report their figures, reports are now being received from practically all roads, and the figures have been revised to include the Pennsylvania back to the first week in June. For the four weeks ending June 26 the showing is as follows:

	Cars revenue freight loaded			Received from connections		
	1920	1919	1918	1920	1919	1918
June 5	788,974	776,610	933,007	573,852	524,731	725,622
June 12	878,041	807,205	974,840	647,777	563,838	728,709
June 19	869,142	807,907	974,840	640,594	574,895	728,709
June 26	869,350	845,684	947,841	622,007	591,200	729,157

The report for the week ended June 26 is as follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO—FOR WEEK ENDED SATURDAY, JUNE 26, 1920

District	Year	Grain and grain products	Live stock	Coal and coke	Forest products	Ore	Miscellaneous	Total revenue freight loaded: This week 1920	Corresponding week 1919	Corresponding week 1918	Received from connections: This week 1920	Corresponding week 1919	Corresponding week 1918
Eastern	1920	6,289	2,634	56,349	9,070	8,198	132,313	214,853	.....	.....	235,672	.....	.....
	1919	6,449	2,953	52,369	8,269	7,629	133,885	.....	211,554	213,650	.....	229,154	245,824
Allegheny	1920	1,769	2,240	62,952	3,818	8,470	86,865	166,114	.....	.....	114,866	.....	.....
	1919	1,974	2,383	58,100	4,840	10,912	97,928	.....	176,137	222,123	.....	129,709	203,872
Pocahontas	1920	129	162	21,990	2,046	193	9,882	34,402	.....	.....	22,056	.....	.....
	1919	107	125	25,221	2,098	240	9,416	.....	37,207	41,129	.....	18,528	24,140
Southern	1920	3,087	2,320	24,368	17,578	2,089	72,775	122,217	.....	.....	77,362	.....	.....
	1919	2,893	2,268	22,656	17,932	2,594	67,929	.....	116,272	120,984	.....	59,780	70,451
Northwestern	1920	9,333	7,209	10,059	17,251	46,773	60,802	151,427	.....	.....	55,617	.....	.....
	1919	9,109	8,386	7,393	18,104	43,966	64,021	.....	150,979	175,152	.....	52,617	75,029
Central Western	1920	9,220	9,954	21,785	6,219	2,957	71,934	122,069	.....	.....	70,521	.....	.....
	1919	6,318	9,928	16,515	5,258	3,364	60,709	.....	102,092	118,351	.....	60,625	66,210
Southwestern	1920	3,826	2,835	5,809	7,986	217	37,595	58,268	.....	.....	45,913	.....	.....
	* 1919	2,626	2,346	4,904	7,387	180	34,000	.....	51,443	56,452	.....	40,787	43,631
Total all roads	1920	33,653	27,354	203,312	63,968	68,897	472,166	869,350	.....	.....	622,007	.....	.....
	1919	29,476	28,389	187,158	63,888	68,885	467,888	.....	845,684	.....	.....	591,200	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	947,841	.....	.....	729,157
Total increase	1920	4,177	.....	16,154	80	12	4,278	23,666	.....	.....	30,807	.....	.....
Total decrease	1920	.....	1,035	.....	.....	.....	.....	.....	102,157	.....	.....	137,957	.....

*Not reported 1920 and 1919: Missouri & North Arkansas; Natchez & Southern.

Accumulations of freight cars, which had been reduced to 105,000, or about the number reported as of March 1 when the railroads were returned to private management, had increased during the week ending June 25 to 121,529, as a result of the recent recurrence of strikes at several eastern terminals. The weekly car shortage reports also continue to show increases. The average of deferred car requisitions for the week ending June 23 was 125,458, including both the United States and Canada, or 118,263 excluding Canadian roads. Of the total, 39,925 were coal cars.

THERE IS GOING TO BE freight congestion in this country until the railways are returned to the same condition of efficiency as before the government took them over, and made a reputation by momentum from the excellences of private operation, and by suspension of the laws which it had required the railways to obey. The quickest relief to the railway situation could come from the source which needs it most—that is, from the shippers. They could put a car a day on the tracks for each day they hastened it out of the terminals. They could increase the efficiency of the cars as much as they increased the proportion of the carload, now only 70 per cent. They could make the railways prosperous by paying an increase of rate cheerfully, instead of by obstructing it.—*New York Times.*

Commission Working on Rate Case

WASHINGTON, D. C.

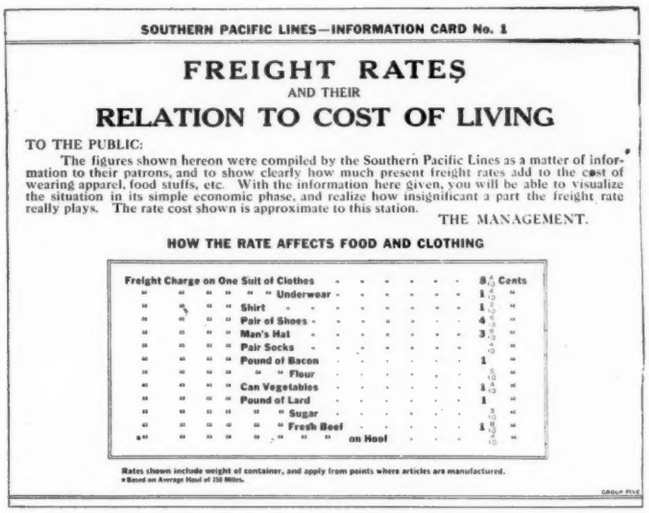
MEMBERS of the Interstate Commerce Commission have been concentrating this week on a study of the rate case data with a view to announcing an early decision after the award of the Railroad Labor Board, promised before July 20, makes it possible to determine how much additional revenue will be required to pay for wage advances to the employees. The commission cancelled all hearings for this week which had been scheduled to be held before the commissioners themselves, in order that they might devote themselves to the general rate case. This included oral arguments in three rate cases but did not affect the hearings conducted by examiners.

While there has been, of course, no word from the commission as to when a decision may be expected, there is a very general hope among those who have followed the hearings closely that it may be announced very shortly after the wage award is known and not much later than August 1. It is the intention to make the rates effective on September 1, when the guaranty to the roads provided in the transportation act expires, and it is believed that the commission will consider it highly desirable to give shippers as nearly as may be the usual 30-day notice of what rates they will be required to pay. Also some time would be required for the actual preparation and filing of even the simple supplemental tariffs that the railroads have proposed.

The award of the Railroad Labor Board might be framed in such a way that some time would be required to calculate, from the detailed schedules of rates, the annual amount of increase in money that would be added to the payrolls, but there seemed to be a general agreement at the close of the hearing last week that one rate adjustment should be made to cover both the wage increase and the amounts needed to put the railroads on a 5½ or 6 per cent income basis which were estimated in the carriers' applications. It is regarded as certain that a part of the additional rate increase needed to meet the wage advance will be placed upon the passenger fares, as the railroads announced at the close of the hearing that that will be their proposal and several of the commissioners, as well as a large number of shippers at the hearing, indicated a belief that all of the advances should not be borne by the freight traffic. The carriers have promised to file with the commission a detailed proposal for dealing with the wage advance as soon as its amount is known.

Freight Rates and the Cost of Living

THE SOUTHERN PACIFIC LINES in Texas and Louisiana are now carrying on an extensive campaign with a view to informing their patrons as to the relation between freight rates and the cost of living. The campaign has been worked out along lines similar to that of the Pacific Lines of the Southern Pacific, described in the *Railway Age* of May 28 (page 1524). It differs from the other campaign, however, in that whereas the Pacific Lines adopted the idea of posting placards relating to individual



SOUTHERN PACIFIC LINES—INFORMATION CARD No. 1

FREIGHT RATES
AND THEIR
RELATION TO COST OF LIVING

TO THE PUBLIC:

The figures shown hereon were compiled by the Southern Pacific Lines as a matter of information to their patrons, and to show clearly how much present freight rates add to the cost of wearing apparel, food stuffs, etc. With the information here given, you will be able to visualize the situation in its simple economic phase, and realize how insignificant a part the freight rate really plays. The rate cost shown is approximate to this station.

THE MANAGEMENT.

HOW THE RATE AFFECTS FOOD AND CLOTHING

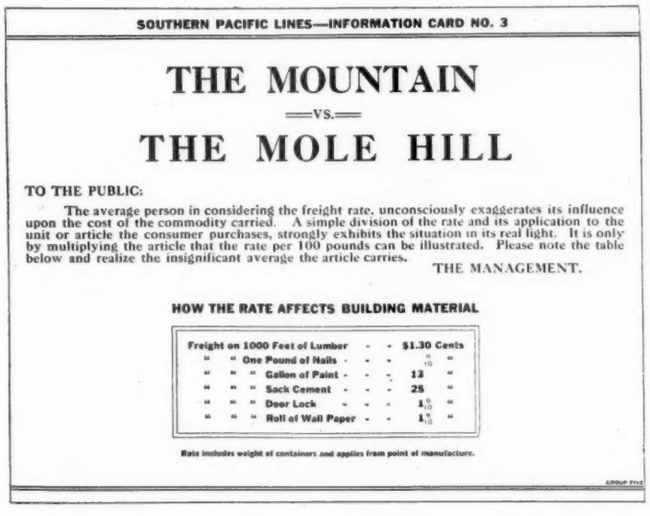
Freight Charge on One Suit of Clothes	8½ Cents
" " " " " Underwear	1 "
" " " " Shirt	1 "
" " " " Pair of Shoes	4 "
" " " " Man's Hat	3 "
" " " " Pair Socks	½ "
" " " " Pound of Bacon	1 "
" " " " " " Flour	½ "
" " " " Can Vegetables	1½ "
" " " " Pound of Lard	1 "
" " " " " Sugar	½ "
" " " " " Fresh Beef	1½ "
" " " " " " on Hoof	½ "

Rates shown include weight of container, and apply from points where articles are manufactured.
* Based on Average Haul of 350 Miles.

GROUP FIVE

commodities at individual stations, the Louisiana and Texas lines are posting placards showing related commodities to groups of stations.

The cards number six in all and each card is seggregated into five different groups according to the relation of the territory in each group to the freight rate. In this article there are reproduced two of the cards which have been used in



SOUTHERN PACIFIC LINES—INFORMATION CARD NO. 3

THE MOUNTAIN
—VS.—
THE MOLE HILL

TO THE PUBLIC:

The average person in considering the freight rate, unconsciously exaggerates its influence upon the cost of the commodity carried. A simple division of the rate and its application to the unit or article the consumer purchases, strongly exhibits the situation in its real light. It is only by multiplying the article that the rate per 100 pounds can be illustrated. Please note the table below and realize the insignificant average the article carries.

THE MANAGEMENT.

HOW THE RATE AFFECTS BUILDING MATERIAL

Freight on 1000 Feet of Lumber	$1.30 Cents
" " One Pound of Nails	½ "
" " " Gallon of Paint	13 "
" " " Sack Cement	25 "
" " " Door Lock	1½ "
" " " Roll of Wall Paper	1½ "

Rate includes weight of containers and applies from point of manufacture.

GROUP FIVE

group five. Card No. 1 headed "Freight Rates and their Relation to the Cost of Living" gives rates on thirteen items of food and clothing. Card No. 3 headed "The Mountain and the Mole Hill" deals with rates on building material. Similarly other cards show the rates on simple home necessities, on some luxuries, etc. The rates named on each card are noted as including the weight of the containers and as applying from the point of manufacture. The figure given in each case represents the maximum cost on the unit in question to any station in the territory or zone covered by the group.

To carry the intended lesson to the reader, each card contains a brief message, as will be noted in the illustrations. The cards are posted in each station near the bulletin board and follow each other in sequence every two weeks. They are of different colors and about 11 by 14 in. in size.

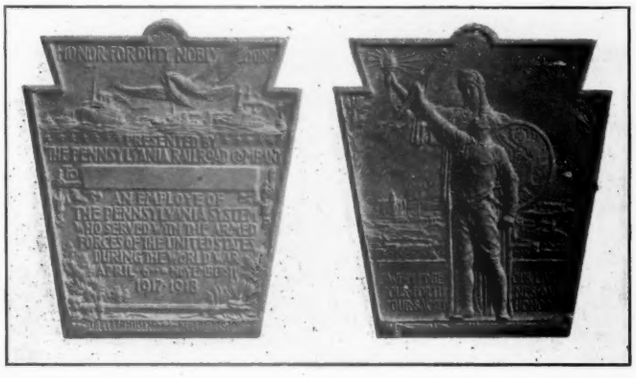
Medals for Pennsylvania Patriot-Employees

THE DIRECTORS of the Pennsylvania Railroad Company in recognition of the patriotism and devotion of 27,128 employees who served in the armed forces of the United States during the World War, and "in appreciation of the honor reflected upon the company by their actions" has presented bronze medals to each of such employees now living or to the relatives of those who died in the military or naval services. These latter number 610. Most of the presentations were made on Saturday afternoon, July 10, at gatherings at division headquarters and other appropriate places, each presided over by a superintendent or other officer.

Each medal was accompanied by a letter from President Samuel Rea.

Mr. Rea said:

"Appreciating the unselfish patriotism and devotion to



The Medal Presented to Employees of the Pennsylvania Who Were in Military Service

ideals and duty shown by the unusually large number of officers and employes of the Pennsylvania System who made great personal sacrifices to serve with the armed forces of our country during the World War, the board of directors desires to commemorate the service so freely given and the duty so well done, and has, therefore, authorized and directed the preparation and distribution of a suitably engraved medal to each officer and employee so serving between the 6th of April, 1917, and the 11th of November, 1918.

"The medal is presented to you herewith, and the hope is expressed that it will ever recall the faithful and effective service rendered by you in the greatest conflict ever waged in the defense of right. In distributing these medals, I take pleasure in adding a word of personal thanks and congratulations to each of you, of whom, it is unnecessary to add, I am justly proud."

The medal bears on its face a figure of a soldier, shown in the act of dedicating his life to Liberty. Liberty, though saddened by thoughts of sacrifice which her request imposes, serenely looks down upon her beloved son, proud of him who

will not falter in his duty as an American. Above them a new service star has arisen. The soldier's attitude presages victory. With head thrown back, and fist clenched, he has firmly raised the gun, consecrating his all to the great cause.

In the distance are the scenes of the peace-time occupation of this citizen soldier; railroad trains and vessels on the water; while silhouetted against the Palisades is the Pennsylvania station, New York City, the scene of millions of soldier farewells. On the left is Broad Street Station, Philadelphia, and farther inland appear railroad shops. The reverse side of the medal shows the victors returning on army transports, battleships, destroyers and other vessels, manned by American sailors, while the flagship "Pennsylvania" is flying the homeward bound pennant.

On either side of the ribbon bearing the name of the recipient are placed semaphores; the first, set at "Stop" or "danger" symbolizes the earlier days of the war, while the other, set at "Clear," signifies that the enemy has been vanquished, and that the wheels of commerce may again be set in motion.

Commission Approves Loans for Equipment and Other Improvements

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION has certified to the Secretary of the Treasury its approval of the making of loans to the railways of the country—under Section 210 of the Transportation Act, 1920—aggregating $16,593,275.

Aransas Harbor Terminal

For the Aransas Harbor Terminal Railway a loan of $135,000 was approved on June 22. The line of this railway, extending from Aransas Pass, Texas, to the Gulf of Mexico at Port Aransas, Texas, was damaged by a hurricane to such an extent that it is necessary to reconstruct a considerable portion of the line and it is proposed to rebuild with an improved type of construction. It is a condition of this loan that no payment is to be made by the United States until a total of $270,000 shall have been subscribed and paid in toward the reconstruction cost by the security holders of the railway and the communities interested therein, and the money advanced by the United States is to be used for capital expenditures only. The reconstruction of the road will make available a port on which the United States has expended several millions of dollars and will afford a more direct and expeditious route for shipments of oil from Mexico upon which a large section of Texas is increasingly dependent.

Carolina, Clinchfield & Ohio

A loan of $2,000,000 to the Carolina, Clinchfield & Ohio was certified on June 26, to assist the carrier in financing its immediately pressing maturities. Before making this loan the commission required that the carrier should effectively finance its other obligations by the sale to its stockholders or others of its income debentures at an amount not less than $5,000,000, to bear not more than 6 per cent and to be sold or exchanged at not less than par without other cost to the carrier. The conditions imposed by the commission were accepted and complied with by the carrier and its undertaking to dispose of its debentures on a 6 per cent basis has been underwritten by a responsible banking house. The Carolina, Clinchfield & Ohio occupies an important place in railway transportation in the Southeast. A heavy coal tonnage is its chief traffic characteristic.

Bangor & Aroostook

For the Bangor & Aroostook a loan of $200,000 was certified on July 6. This was to aid the carrier in obtaining six freight locomotives the total value of which is $360,000, and also to enable the carrier to provide itself with necessary shop machinery and tools, a coal storage plant and passing tracks at a cost of about $20,000. This carrier has undertaken itself to finance one-half the cost of the locomotives and $58,000 for other necessary additions and betterments. The Bangor & Aroostook handles a very large tonnage of wood pulp which is manufactured into news-print paper and for which there is universal consumption. This carrier is also called upon each year to transport a crop of from 20 to 25 million bushels of Irish potatoes—of which 35 to 40 per cent is distributed throughout the country for seed purposes. The locomotive power of this carrier has for some time been taxed to the limit with the heavy traffic it has been called upon to handle.

Illinois Central

A loan of $4,511,750 was certified to the Illinois Central on July 8, 1920, to aid it in acquiring 75 locomotives, 1,000 refrigerator cars, 200 flat cars, 200 stock cars and 52 caboose cars. The total value of this equipment will be approximately $12,072,000. The notable features of this loan is the inclusion therein of 1,000 refrigerator cars. Such cars are urgently needed throughout the country for the transportation of perishable food products. The contribution to be made by the Illinois Central to meet the government's loan of $4,511,750 is a large one, about $7,560,300.

Chicago, Burlington & Quincy

A loan of $4,446,523 to the Chicago, Burlington & Quincy was approved July 9, 1920. The loan will assist the carrier in obtaining 45 locomotives, 500 stock cars, 1,000 refrigerator cars, 1,000 box cars and 1,000 gondola cars, the aggegate value of which will be about $14,840,550 of which the carrier itself is contributing $10,394,025. This loan, like the one to the Illinois Central, will put into general circulation a large number of refrigerator cars for which there is a pressing demand.

Salt Lake & Utah

The commission approved, on May 24, 1920, a loan to the Salt Lake & Utah of $64,600 to aid it in acquiring new equipment, and has just approved an additional loan of $235,400 to the same carrier to assist it in making other additions and betterments and in financing its pressing maturities. To meet the loan of the government the carrier has itself undertaken to finance, for new equipment $213,563, for other additions and betterments $78,600 and for maturities $43,336. The tonnage of sugar beets on the line of this carrier is large and its local traffic—both freight and passenger—is relatively important.

Atchison, Topeka & Santa Fe

For the Atchison, Topeka & Sante Fe a loan of $5,493,600 has been approved, to aid the carrier in acquiring 2,500 refrigerator cars, 500 gondola cars and 50 heavy freight locomotives. The total value of the refrigerator cars is about $11,875,000, gondola cars $1,501,500, and freight locomotives $4,298,900. The contribution required of the carrier to meet the loan of the government is $12,-181,800. The making of this loan will put into general circulation 2,500 refrigerator cars which are urgently needed, and will aid the carrier in bringing its quota of locomotives, gondola and refrigerator cars to a point where it can handle with efficiency the heavy transportation demands of every character that are being made upon it.

Fuel Loss Caused by Front End Air Leaks

Good Design and Eternal Vigilance Required to Prevent Fuel Losses From This Source

It is questionable if the serious effects of front end air leaks are fully appreciated and whether adequate measures are being taken to prevent their bad effects. The direct result of air openings in the front end is to reduce the vacuum in the smokebox and lessen the draft on the fire. This in turn necessitates the use of a smaller nozzle area to produce the desired draft. A reduced nozzle increases the back pressure in the cylinders, from which it is apparent that the efficiency of the locomotive is directly affected by air leaks in the smokebox.

It has been pointed out that these air leaks do not usually develop suddenly and that their effect on the draft is gradual. Consequently as the steaming qualities of the locomotive are gradually impaired the nozzle is invariably bushed down or a bridge is required. If these front end air leaks occurred suddenly their effect would be so noticeable that they would unquestionably be investigated and corrected.

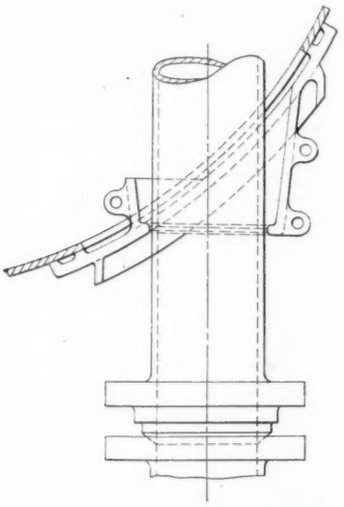


Fig. 1—Usual Type of Joint Between Smokebox and Outside Steam Pipe

The harmful effect of a front end air leak often remains after the leak itself has been stopped up, for after a nozzle has been bushed down or bridged to counteract the effect of an air leak in the front end, it is not always enlarged to its former dimensions as soon as the air leak has been closed. In fact, it is quite common for locomotives that have required a reduction in nozzle size, for some cause or other, to keep on running with the reduced nozzle long after the immediate cause has been removed. Only the strictest supervision over this matter will result in the elimination of needlessly restricted nozzles.

Principal Cause of Front End Air Leaks

Outside steam pipes are not the only cause for front end air leaks but they can doubtless be regarded as the principal cause. The most troublesome point in connection with this construction has been to close the aperture in the smokebox shell through which the steam pipes pass to the cylinders. Obviously these pipes cannot be rigidly connected to the boiler shell at this point and must be allowed freedom of movement to allow for contraction and expansion. Outside steam pipes possessed so many advantages and adapted themselves so readily to superheater installations that the difficulty of maintaining a tight joint between the smokebox and the steam pipes was somewhat overlooked and the earliest joints intended to prevent air leaks have proved more or less inadequate from this standpoint.

Fig. 1 shows an arrangement that has been applied to a large number of locomotives. The gland is packed, preferably with asbestos rope, and if this packing is carefully maintained the joint will remain tight. However, it must be observed that the pressure on this packing, resulting from a vacuum in the front end, tends to loosen rather than compress the packing, and it will usually work loose so as to admit air, unless frequently attended to between shoppings. The use of any cement in this gland as a substitute or makeshift to reduce the time and expense of frequent repacking is not a desired expedient. The cement soon develops cracks through which air is admitted to the smokebox, and often crumbles and drops out of the gland altogether. This is due to the fact that the cement contains moisture at the time the joint is packed, which invariably dries out, causing

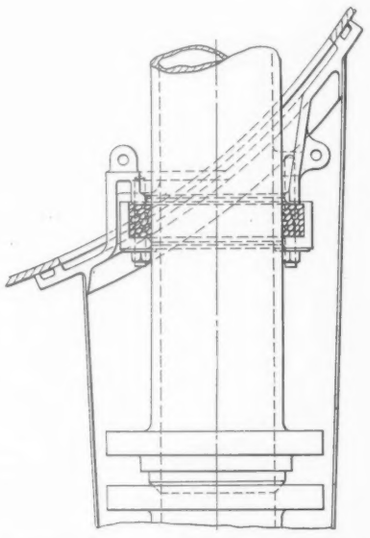


Fig. 2—Improved Type of Joint for Outside Steam Pipe

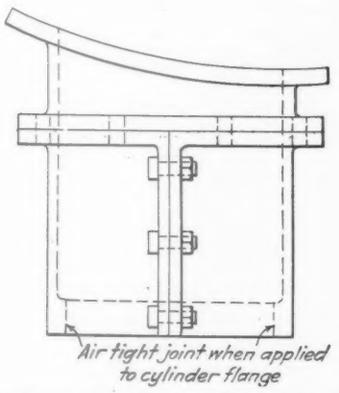


Fig. 3—Early Design to Prevent Air Leaks

the packing to shrink around the steam pipes. The use of cement for this purpose cannot be too strongly condemned.

Improved Construction to Prevent Leaks

The use of a packing gland with means for maintaining the packing in place as shown in Fig. 2 is one of the most practical and certainly the most substantial means for obtaining a joint which, if properly packed, will remain tight from shopping to shopping. This form of construction was applied to quite a large number of locomotives, including all of the locomotives built for the Railroad Administration. The application of this or an equivalent device to existing locomotives, as well as to all new power, cannot be too strongly urged. The use of cement, as has been pointed out, is altogether unsatisfactory and the application of other material without means for holding it in place will necessitate frequent inspection and repacking.

Front end air leaks around the steam pipes may be corrected on a large number of locomotives on which this has been a source of trouble, by redesigning or inserting an effective packing gland to protect this joint. Fig. 3 illustrates a device that was designed to prevent air leaks around the outside steam pipes, but has never proved very satisfactory from this standpoint. In this arrangement a flanged casing is attached to the smokebox and a casing formed from two halves bolted to the lower flange of this casing. The lower end of the casing is designed to fit closely over a flange in the steam pipe immediately above the cylinder casting and the two surfaces in contact are machined to make a tight fit. This, however, does not always result and on locomotives so equipped it would be better to discard all of this casing, except the flanged piece attached to the smokebox, and substitute a stuffing box and packing gland as

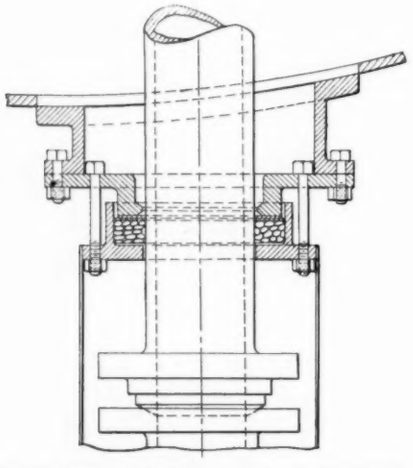


Fig. 4—Application of Stuffing Box and Gland to Design Shown in Fig. 3

shown in Fig. 4, which can be easily accomplished with the addition of two castings.

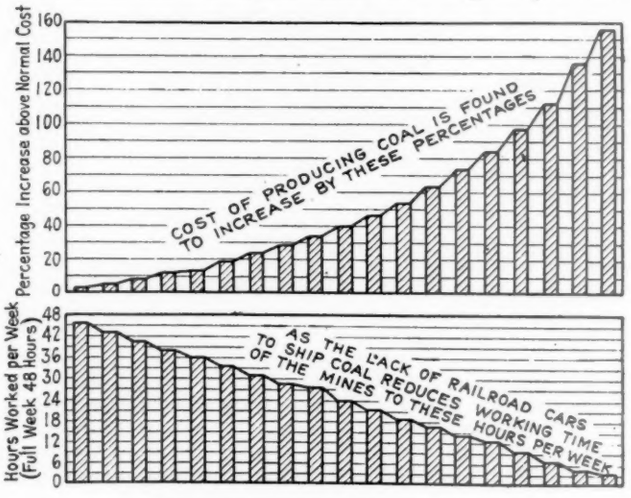
Good Design and Maintenance Essential

The problem of avoiding leaks at outside steam pipes is one that requires not only persistent attention in the engine terminal and shop, but should be carefully considered by mechanical engineers in designing new locomotives and improving old locomotives as they go through the shops. It is safe to say that wherever outside steam pipes are in use, a large percentage of locomotives will be found to have air leaks around the steam pipes, unless special precautions are taken in design as described in the foregoing, or unusual care is exercised with respect to this detail of locomotive maintenance. It is entirely possible that the design of an air-tight joint can be further improved, but it is of greater importance that the application of some of the improved designs already available be made more universal.

Individually, the front end air leak is never too small a matter to be overlooked and in the aggregate the loss in locomotive efficiency and capacity occasioned by front end air leaks will approach a surprising total on almost any railroad.

Effect of Car Shortage on Cost of Producing Coal

THE ENGINEERS' COMMITTEE of the Fuel Administration issued a report which contained figures showing the effect of lack of cars on the cost of mining coal. This information is being circulated in a diagram published



How Lack of Cars Increases Cost of Coal

by the National Coal Association. A reproduction of the chart is shown herewith through the courtesy of Coal Age.

Making Wood Fire Resistant With Paint*

FIRE-RETARDENT PAINTS are the most practical means so far discovered by the Forest Products Laboratory by which small amounts of wood can economically be made fire resistant. The only other known methods of decreasing the inflammability of wood are to keep it wet, or to inject into it certain chemicals under pressure. These methods, though more effective than painting, are usually either impracticable or too expensive to be considered.

Ordinary calcimine or whitewash has proved in tests to be as fire resistant as any paint covering tried. It is cheap and convenient to use. Although it will not prevent the burning of wood exposed continuously to a high heat, a good coat of calcimine on wood will decrease the danger of a blaze spreading from burning cigarettes, sparks, matches, and similar small sources of fire. Calcimine is, of course, more effective for inside than for outside use.

For exterior use numerous patented fire retardent paints are available. An effective outdoor paint which has been developed at the Forest Products Laboratory consists of linseed oil, zinc borate, and chrome green. This paint has maintained its fire-resisting properties through more than three years of exposure to the weather.

*From Technical Notes No. 106 issued by the United States Forest Products Laboratory, Madison, Wis.

Coal Order Modified and Extended

Shippers in Wrangle Over Comparative Importance of Products That Move in Open-Top Cars

WASHINGTON, D. C.

AS THE RESULT of the hearing held before the commission on July 8, 9 and 10, the Interstate Commerce Commission on July 13 issued Service Order No. 9 extending its previous order, Service Order No. 7, which gave priority to the use of open-top cars for bituminous coal loading east of the Mississippi river for 30 days beginning June 21, for 30 additional days. The new order also amended the previous order to provide that the words "coal cars" as used in the order shall not include or embrace flat bottom gondola cars with sides less than 36 inches in height, inside measurement, or cars equipped with racks or cars which on June 19 had been definitely retired from service for the transportation of coal and stenciled or tagged for other service. This is to meet the complaints of steel and ore shippers that certain railroads had interpreted the order to include such cars as coal cars and thus to prevent their being used for steel and ore shipments.

The provision in Order No. 7 authorizing the placing of embargoes against consignees who fail to unload coal cars within 24 hours was extended to provide for an embargo against the placement of open-top cars for consignment to any consignee who shall fail or refuse to unload coal or other freight transported in coal cars and placed for unloading within 24 hours after which placement until all coal or other freight so transported and so placed has been unloaded by the consignee.

An additional provision was inserted providing that until August 19 railroads east of the Mississippi river are authorized to place, furnish and assign cars to coal mines for the transportation of coal to the extent that may be necessary in order that public utilities, including street and interurban railways, electric power and lighting plants, gas plants, ice plants, water and sewer works, also hospitals, schools and other public institutions may be kept supplied with coal for current use, but not for storage. This may be done in addition to and without regard to the existing ratings and distributive shares for mines, provided no cars shall be supplied without written application therefor from the public utility, concurred in by the delivering railroad, showing that such coal is needed for current use, and not for storage, in order that the applicant may continue in daily operation. It is also provided that such coal shall not be subject to reconsignment except to public utilities or public institutions and that a written report of the cars placed shall be promptly made to the commission by the railroad placing the cars.

In a letter to Daniel Willard, chairman, Advisory Committee, Association of Railway Executives, chairman of the commission explained that following the hearing certain features of the situation seemed to need clarification or correction of Service Order No. 7. "It will be noted," the letter said, "that no especial recognition is given to the lake cargo situation. It is understood that this is the subject of detailed discussions among the coal operators themselves, to be followed immediately by a conference with various railroad executives, and that we will be advised as to the determinations reached. We have not thought it proper to attempt to deal with this situation by order until we know the result of such deliberations.

"There is one feature of the situation as to which we entertain no doubt and which we desire to call to your attention on behalf of the carriers, which seems to us to require immediate and careful consideration with a view to action which will remedy abuses abundantly shown to exist. We refer to the provisions contained in tariffs of the carriers permitting the general promiscuous reconsignment of cars under load with coal. As an emergency proposition, it seems to us that the carriers should at once take steps to bring this practice down to the unavoidable minimum. We are not prepared to say that all reconsignment of coal should be prohibited; but it seems to us that it would be a very unusual situation in which more than one reconsignment should be permitted during the existing transportation emergency.

"The privilege of reconsignment of coal is one which is carried in the tariffs of the carriers. Without discussing or deciding whether the commission has power, under the emergency provisions of the Transportation Act, to require the restriction or suspension of this privilege, with the myriad situations which exist in the country it is obvious that the carriers should themselves bring forward promptly proposals to the commission for a suitable amendment to their tariffs on short notice in harmony with the views here expressed.

"We will thank you if you will see that this is called to the attention of the carriers represented in your association."

At a conference of leading bituminous coal operators held at Washington on Monday and Tuesday for the purpose of discussing the entire coal transportation problem, a committee of seven, headed by President D. B. Wentz of the National Coal Association, was appointed to meet with the Advisory Committee of the Association of Railway Executives at New York on Wednesday. The conference was arranged with Mr. Willard, chairman of the committee. According to a statement issued by Mr. Wentz the committee of operators has authority to act for the bituminous operators of the United States and "is prepared to take definite and drastic action in connection with the railroads to relieve the fuel shortage."

At the operators' meeting the problem of supplying the northwest with fuel via the lakes and of furnishing an adequate supply for New England was the principal topic of discussion and various plans were considered. Proposals that the zone system be re-established were not approved, and, according to statements made to newspaper men after the meeting, there was some criticism of the railroads for failure to carry out the commission's priority order in some instances. On Tuesday the operators' committee conferred with the shippers who have contracts for coal for movement to the lake docks and to New England, and attention was also given to the emergency requirements of New York, Philadelphia and other large eastern cities whose fuel supply for public utilities is reported to be critical, but the position was taken that failure to fulfill contracts was caused entirely by the car shortage.

According to a statement issued by the coal association after the meeting, the way to relieve the existing coal shortage would "be plainly pointed out to the railroad executives" at the meeting in New York, but the remainder of the statement indicated that its idea of the way to relieve the coal shortage was to relieve the car shortage and that the way to relieve a car shortage is to furnish more cars, which leaves several factors in the problem still to be considered.

Resolutions were adopted stating that Service Order No. 7 as applied by the railroads is not improving the car supply at coal mines to any appreciable extent and demanding the

amendment and enforcement of the order "in such manner as may be necessary to supply all coal mines and coke operations of the country with sufficient cars to run full time until the coal supply of the country may be definitely and adequately assured." It was also demanded that priority be given in the movement of coal and coke over all other commodities except food, livestock and perishables, with which coal and coke should move on a parity, and it was recommended that the Interstate Commerce Commission limit the privilege of reconsignment of coal to the greatest extent possible in order to eliminate existing abuses.

Another resolution was adopted stating that the dock interests of the Northwest have written and enforced contracts for sufficient tonnage to supply their requirements and that if the recommendations of the meeting relative to car supply are carried out the Northwest will be amply supplied with the coal that has already been purchased. It was stated also that the meeting is satisfied that if these recommendations are carried out there will be ample coal for all other parts of the country, including New England.

Hearing on Open Top Car Distribution

An alarming picture of the hampering effect of inadequate transportation service was drawn at the hearing before Commissioners Clark, Aitchison and Potter, sitting as Division No. 5 of the Interstate Commerce Commission, on July 8, 9 and 10, on the question of the distribution of open-top cars with particular reference to the commission's Service Order No. 7, giving priority for 30 days from June 21 to bituminous coal east of the Mississippi river. The picture was drawn principally by the shippers and consumers of products other than coal that move in open cars, whose business has been materially restricted by the temporary priority order and who complained that they were being discriminated against, while the shippers and users of coal, who have been benefited by the order, had not had their advantage for a sufficient period since it went into effect to be able to inject much encouragement into the view of the situation.

As a result the hearing developed largely into a wrangle as to the comparative shortage and comparative essentiality of various commodities and the remedies suggested ranged all the way from a demand that the commission abolish the order and allow all interests an equal chance at the available cars, to recommendations that it or some other authority set up a complete system of priorities for apportioning the cars between essentials. Other suggestions were that the order be modified to allow a greater share of the cars for the use of construction and road-building materials and ore, on the one hand, and that it be extended or strengthened for the purpose of meeting the most critical fuel situations on the other hand.

Daniel Willard, chairman of the new advisory committee of the Association of Railway Executives, began the testimony with a frank statement that there would not be enough transportation to go around for another year, unless there shall be a slackening of business, and of the reasons for that condition. Mr. Willard's statement was published in last week's issue. His explanation of the situation called forth many expressions of approval from shippers present who appreciated the sincerity of the desire on the part of the railroads to do everything in their power to meet the problem, but there were also many criticisms of the railroads for failure to display greater efficiency in the movement of cars in specific instances and numerous stories of cars being held idle for long periods.

The hearing illustrated in a striking manner the ramifying effect of a shortage of transportation facilities, the interdependence of industries of various kinds and the vital dependence of all upon transportation. This was particularly brought out in the testimony of the witnesses interested in road-building, who had planned an elaborate program of highway construction largely for the purpose of encouraging motor truck transportation, either in competition with or as supplementary to the railroads, which program now cannot be carried out because the railroads cannot transport the necessary materials.

Shippers on construction materials insisted that their product is just about as essential as coal, more so than coal for non-essential uses. Some highway officials pointed out how good roads would enable the motor trucks to help the railroads in handling the traffic, while others referred to the damage done to roads by motor trucks which made it imperative that cars should be furnished for repair materials. Cement and lumber shippers said their product was needed to enable the farmers to build granaries in which to store the grain instead of asking the railroads to haul it all at once; lumber shippers complained that they could not sell their produce for building purposes if cement is not also available; glass manufacturers urged the importance of sand; representatives of public utilities insisted in the paramount importance of fuel, while other witnesses urged the crying need for additional housing facilities.

In opening the hearing Chairman Clark said that many informal complaints regarding the order had been received, but that the fuel situation is very bad, as everyone knows, and important public utilities, including railroads, are without any reserves and living from day to day.

Mr. Willard said that the action taken up by the commission in issuing the priority order, in his opinion, was one which should have been taken and he suggested no modification in the order, but thought that it should be possible for the shippers and railroad officers to get together to see how exceptional cases could be taken care of under the order and that, if necessary, the commission could be asked for modifications.

In discussing the freight congestion, Mr. Willard said he understood the accumulations of cars after having been reduced to the number that was on hand at the end of federal control, had been increased to about 120,000 as a result of the recent outbreak of the strikes. He said that no one can predict what the railroads can do in the face of a situation like that because the congestion delays coal loading, wheat loading and movement of all kinds.

One of the most serious problems facing the railroads, Mr. Willard said, is the carrying out of the program for supplying the Northwest with coal via the lakes. From 25,000,000 to 28,000,000 tons should be transported, but up to July 1 only 4,000,000 tons had gone. This was partly because a smaller proportion of the coal from the districts that usually sent it across the lakes has gone in that direction this year. To carry out the full program the railroads must dump at lake ports nearly 4,000 cars a day for the balance of the season of navigation, but the railroads cannot carry out the program unless the coal is shipped in that direction. Mr. Willard said the New England situation was not so serious because the ocean is open all the year round, although he understood that the public utilities situation had been serious within the last two weeks as a result of the new strikes. Mr. Willard pointed out that the railroads during the first six months of this year had already moved 40,000,000 tons of coal more than in 1919 and only 25 less cars a day than during the first six months of 1918. If it had not been for the switchmen's strike they would have done more. There is no reluctance on the part of the railroads to do what ought to be done.

Commissioner Aitchison asked whether the trouble is due to an excess of demand for coal or because too much coal is being stored. Mr. Willard said he understood that the coal reserves had been so depleted during the strike that the stocks on hand this spring were much smaller than usual.

He pointed out that the large production of coal in 1918 had been accomplished only under the exercise of the drastic powers of the Fuel Administration and of the Railroad Administration. He would not recommend a return to all of the practices they had used, such as the zoning system, but thought that present conditions require the pooling of coal so that it will not be necessary to keep separate so many different grades of coal. Mr. Willard said there is little reason now to complain of too light loading of coal and there is no difficulty in getting coal cars loaded promptly, but the consignees can help by unloading promptly.

With strikes out of the way Mr. Willard thought the railroads ought to be able to carry out the lake program, but Commissioner Clark pointed out that if shippers do not bill their coal to the lakes the railroads cannot haul it there. Mr. Willard also thought that shippers ought to forego the reconsignment privilege in times of emergency, although the practice was all right in ordinary times. Commissioner Aitchison asked about the supply of railroad fuel on hand. Mr. Willard said he understood that there was about a four days' supply, which is about as low as it is safe to go.

Commissioner Potter asked what machinery the railroads have by which special situations like the movement of highway materials, the lake coal program, etc., can be handled. Mr. Willard said that they can be taken up with the Car Service Commission, or with his committee, and until its local organization is completed, with him personally.

The Fuel Situation

A. G. Gutheim, a member of the Car Service Commission, described how the coal strike had resulted in reducing the reserve stocks at a time when business was going at a tremendous rate and there was a roadbuilding program three times as great as had ever been attempted before. He pointed out that when the coal operators are receiving only a 50-per cent car supply, the fact should be recalled that a 100 per cent supply is more than the country needs or ever had and it would make possible the shipment of 18,000,000 tons a week or 900,000,000 to 950,000,000 tons a year. A 70-per cent car supply, he said, would be sufficient for a production of 12,000,000 tons a week, which would be sufficient. A program of 30,000,000 tons of coal for lake shipment this year, he said, is practically impossible. Last year 40 per cent of the coal had moved to the lakes by July 1; in 1918 only 26 per cent; but in 1920 only 11 per cent. The peak loading at Lake Erie docks was 3,700 cars a day in 1917. Three thousand cars a day would provide 21,000,000 tons.

Commissioner Potter asked whether the small percentage this year is due to any reduction of coal production and Mr. Gutheim said that the shippers which produce the lake coal have had a production about equal to that of last year, but have sent less of the coal to the lakes. Some has gone to New England and some for export. The shipments during the first five months of 1920 and the two preceding years have been as follows:

To New England, by rail	1918	6,900,000 tons
	1919	4,500,000 tons
	1920	5,300,000 tons
Lakes	1918	4,234,000 tons
	1919	5,000,000 tons
	1920	1,650,000 tons
Export, excluding Canada.....	1918	1,466,000 tons
	1919	1,706,000 tons
	1920	5,796,000 tons

Commissioner Clark asked whether there was any transportation difficulty in connection with the movement of lake cargo coal which has not existed in previous years, and Mr. Gutheim said he thought the labor troubles had not been sufficient to account for the difference.

Showing the reduction in the reserves of railroad fuel, Mr. Gutheim read reports showing that the average number of cars of company coal and coke held daily on 155 railroads reached the high point on April 4, 1919, when it was 52,405, or about 10 days' supply. In July, 1919, the number was down to 47,210, in August to 31,877, in September to 26,216, and on October 31, 1919, to 29,191. During the winter the average was from 30,000 to 32,000, as compared with an average daily consumption during the last week of federal control of 6,879 cars. During April the average was from 29,000 to 35,000, and on June 25 it was 27,616, as compared with a consumption of about 8,000 cars daily.

In reply to questions as to what is necessary to get sufficient coal up the lakes, Mr. Gutheim said one of three things is necessary: Either the lake people must buy coal or the operators must ship of their own volition, or there must be some compulsion. Under the assigned car plan the operators could have cars for shipments to the lakes, but not otherwise. But the Fuel Administration assigned so many cars for particular classes of shipments that very few cars were left for regular distribution. The impression he got from the talk of people who visit his office is that consumers can get coal if they are willing to pay the price, although many say they cannot get shipments on contracts because of car shortage, with the result that they buy spot coal from some other district at a higher price and then ask for cars to move it. He said the Boston & Maine had recently paid $14.50 a ton for bituminous coal at Mystic Docks, Boston.

Discrimination Against Sand, Gravel and Cement Complained Of

V. O. Johnson, president of the National Association of Sand & Gravel Producers, said that the entire business of members of his association, the largest users of open-top cars except the coal shippers, has been put in jeopardy by Order No. 7, which had taken away 80 per cent of their coal supply, and he protested most vigorously that they were entitled to a fair share of the equipment. He insisted that it was far more important to use cars for sand and gravel than for coal for near-beer, silk-stocking, piano and pleasure automobile factories. Unless relief is given the industry will be ruined within a few weeks.

A. N. Johnson, of the Portland Cement Association, asked that the priority order be rescinded. The construction industry, he said, is basic; there is a three-year deficiency in construction work, millions of dollars are tied up in uncompleted work and miles of roads are being ruined for want of repairs. He declared that the derangement of traffic caused by orders of the Interstate Commerce Commission and of the Commission on Car Service has not had the desired effect but that "the attempt to give the coal industry a monopoly of the car supply is wrong." This brought a quick retort from Commissioner Aitchison, who said the commission is not trying to foster the coal industry but to supply the country with fuel.

William H. Duval, county attorney of Cook county, Ill., asked the commission to give discretion to the railroads to allow them to furnish sufficient materials for the maintenance of highways, on the ground that the motor trucks would assist the railroads in supplying transportation, but he said that motor truck transportation was too expensive for road materials. Commissioner Aitchison referred to the bitter and repeated protests received by the commission from the public utilities of Chicago regarding the inadequate supply of coal and asked Mr. Duval whether, as a public official, he would rather have coal or material to maintain the highways. Mr. Duval said that it is, of course, necessary to have coal but Chicago has always been able to get it in the past and he thought it would continue to get it. Mr. Aitchison said that much of the difficulty is caused by the fact that citizens of Chicago have refused to work on the railroads.

G. W. Buchholz, representing the Associated General Contractors of America, said that if priority for fuel is neces-

sary it should be restricted to fuel essentials. When Commissioner Aitchison asked who is to decide what are essentials, he replied that the commission should apportion the cars fairly between industries.

Mr. Aitchison also asked the witness where he would draw the line as indicating a non-essential use of cement, as to whether he would merely draw it between opera houses and moving picture places and dwelling houses, or as to whether he would shut off the use of cement for too large a house.

Henry M. Camp, of the National Lime Association, said that preference in favor of coal loading will result in serious delay in the delivery of sand, gravel and crushed stone, which are used in the manufacture of lime, and that it is imperative that building and construction work shall go on, but he appreciated the seriousness of the coal situation because it is also affecting his industry. He said there will be a shortage of 50,000 homes in New York this fall and that shelter may be as important as fuel.

F. G. Ward, representing the National Federation of Retail Lumber Associations, said his members have an abundant stock of lumber, but are unable to dispose of it because of the lack of cement, sand, gravel and sometimes of nails. The farmers are anxious to build granaries in which to store grain, but need cement, sand and gravel.

Thomas H. McDonald, chief of the federal Bureau of Public Roads, said that the road-building program has already been reduced to one-fifth of that for which federal aid had been provided and his department, in connection with state highway authorities, has taken the position in April that no more contracts should be let "until we have cleaned up the mess we have started." He pointed out, however, that it is important to continue a considerable amount of maintenance work because commercial vehicles, which have been forced onto the roads by the railroad transportation difficulties, destroy the roads, and it is essential that this form of transportation be maintained because as high as 10 per cent of the food products are coming into the cities over the roads.

R. E. Riley, representing the washed and white sand producers of Northern Illinois, complained because the priority order had taken away even the unsatisfactory equipment they had formerly received and that no provision had been made for furnishing box cars in its place.

H. B. Fuller, of the American Sand Association, urged consideration of the importance of molding sand for foundries, which he said is as essential as coal.

I. D. Lain, representing the Association of Municipal and Highway Contractors of Illinois, said that bankers are refusing to loan money for roadbuilding work, the bonding companies have sustained losses and are going to refuse to bond contractors, thousands of employees have been thrown out of work and wages are so high that the interruption of material shipments causes large losses.

L. F. Owen, representing the Chicago Building Material Exchange, described the shortage of housing facilities in Chicago and the serious effect on the building trades of the coal priority order, asking that the order be amended so that open top cars may be used for building materials to the extent of 50 per cent of the shipments made in June. He also recommended an increase in the per diem rate on open cars from 90 cents to $2, a demurrage rate based on the value of the commodity, the prohibition of coal reconsignment, an embargo on exports, a distribution of cars among industries in proportion to their capacity and, if necessary later on, an order limiting the furnishing of cars to essentials such as food, fuel, clothing, shelter and highways.

Conflicting Views as to Coal Shortage

George H. Cushing, managing director of the American Wholesale Coal Association, asserting that there is no coal shortage but an "overproduction of demand" and that the priority order should be withdrawn "because it interferes with other people's business without doing anything necessary for the coal business," insisted that current coal production "exceeds the needs or any reasonable demand although far short of the current buying power of the market." He admitted that there is a bad distribution of coal, but he took the position that it was the result of the panicky condition of the market caused by the fact that government officials have scared the public into thinking a coal famine is imminent. He estimated the coal requirements for the year beginning April 1 at 535,000,000 tons and said that while the average weekly production necessary to provide that amount is not usually attained until August, this year it has been reached as early as June.

Asked whether a fuel administrator should be appointed Mr. Cushing said: "If you want to hopelessly ball up the situation that is what you should recommend. This is election year and there is not a man in the United States with enough courage to fix the price of coal where it ought to be." Asked what he would consider a high price for coal Mr. Cushing said anything over $5.50 a ton. Chairman Clark read a circular letter from a coal company offering coal already in cars at $13 a ton.

John W. Lieb, vice-president of the National Electric Light Association, and other representatives of public utilities said that their reserve stocks have almost completely disappeared and they are living from hand to mouth. They have had to buy spot coal in the open market at $12 to $15 a ton and many companies have shared their fuel supplies with others in order to keep the plants running, while the soliciting departments are busy keeping away new business, because in many cases it has been necessary to curtail output at a time when the companies ought to be accumulating reserves. Mr. Lieb said that the solution is a preferential car assignment at the mines for public utilities. He also expressed acknowledgment of the "splendid co-operation received from railroad officials in trying to remedy the situation."

Oscar H. Fogg, of the American Gas Association, said that the visible supply of coal for the utilities in New York had decreased during the past week from 180,000 to 130,000 tons. In reply to Commissioner Potter, he said that 95 per cent of the companies have contracted for the fuel and could get it if the car supply were adequate.

W. H. Groverman, representing the lake dock operators, said that only 61 mines in five states on six railroads are obligated by contract to ship coal to the lakes. He also said that the large number of wagon mines, which outnumber the standard mines three to one, are decreasing the production of the latter because they can get a car and take a whole day to load it as against only three minutes to load a car under a tipple. These smaller mines add something to the production, but they decrease the supply of cars at the standard mines and the companies having contracts for lake coal have been getting only a 35 per cent car supply and they cannot meet the requirements on that basis.

Carl D. Jackson, of the Wisconsin Railroad Commission, asked that the order be strengthened so as to insure an adequate supply of coal to the Northwest.

Eugene McAuliffe, president of the Union Colliery Company of St. Louis, and also representing several public utilities thought the government should take over the regulation of export coal to stop profiteering. No matter what the railroads and the commission do, he said, there will not be enough coal moved to the Northwest this season. He suggested that the commission revoke the assigned car privilege and when asked whether it is not the common practice for operators to order more cars than they are entitled to, he admitted that the practice was common, but that it was

the fault of the railroads for failure to sufficiently police the distribution of cars. He said that the privilege of reconsignment should be revoked and the establishment of the zone system should be reconsidered.

"The practice of buying switching service and empty freight cars in terminals has grown to such proportions as to warrant the criminal prosecution of those involved," Mr. McAuliffe said. "The money thus paid clandestinely for the service is said to equal or exceed the amount returned shippers in the form of rebates in times past. That is a generality but that testimony has come to me so overwhelmingly from shippers, from railroad officials and from my own employees as to the necessity of doing these things, that I think the commission, if they care to go into the thing, will find no difficulty in getting at the facts."

"For your information," said Chairman Clark, "I will say that the commission has found very extreme difficulty in getting the facts. We have been nosing after that thing now for months. It is not customary to advertise things of that kind that we are doing, but there comes a time sometimes to speak a word in defense of some things being shot at from every angle without any information as to facts."

"If you can get a specific case," said Mr. McAuliffe, "I will furnish you with information about it."

Chairman Clark read a letter from the Canadian War Mission pointing out that Canada is dependent on the United States to a large extent for coal, estimating its requirements at 17,000,000 tons. The letter said that a critical stage had been reached in Canada and it was feared that an adequate supply was not forthcoming.

J. D. A. Morrow, vice-president of the National Coal Association, commending the commission's order, asserted that only by its strict enforcement can the country's immediate demand for coal and the supply for next winter be met. It is conservatively estimated, Mr. Morrow told the commission that the country needs at least 545,000,000 tons of coal for its requirements for the current year, ending March 31 next. Part of this is needed to make up a shortage of some 15,000,000 tons that ordinarily would have been in the country's bins on April 1 last. Since April 1, shipments from the mines have been running 1,245,000 tons a week below requirements, until, on June 26, they had fallen 16,000,000 tons below the requirements, making a total shortage today of between 30,000,000 to 35,000,000 tons.

With the natural transportation difficulties of the winter months to face, the mines, Mr. Morrow said, ought to produce an average of 12,000,000 tons a week from now until December 1, if the country is to have the aggregate production needed to make up the deficit and to carry it through the winter. At present, he pointed out, the production is running approximately 10,400,000 tons a week.

Iron and Steel Companies Faced with Shortage

The representatives of iron and steel companies who testified on July 10 did not particularly object to the priority for coal, because they are also having difficulty in obtaining adequate fuel supplies, but they wanted a share of the open-top cars for ore and other raw materials and iron and steel products and particularly an interpretation of the order to define exactly what cars should be reserved for coal loading and to prescribe more specifically how they may be used on the return empty movement.

J. F. Townshend, traffic manager of the National Tube Company, said that the railroads are making various interpretations as to what is a coal car, ranging from flat cars to 36-inch gondolas and refusing the steel mills the use of some types of cars that carry only 30 per cent of their capacity when loaded with coal. He said that the ex-lake ore shipments so far this year have been 3,000,000 less than for the corresponding period of 1918 and he thought that open-top cars made empty at the lake ports should be loaded with ore instead of being returned direct to the mines. He produced figures showing that 20 steel companies have 1,416,727 tons of steel products, or 28,334 carloads piled at the mills, on platform and in yards awaiting shipment, while many mills have been shut down for lack of cars.

W. S. Guy, assistant traffic manager of the Carnegie Steel Company, said that its business is in the most deplorable condition in its history. It is unable to get enought raw materials to run all of its blast furnaces; some are running irregularly and in addition it is not able to ship its finished and semi-finished products which are piled so high that it will soon be necessary to stop production altogether until shipments can be made. Thousands of men have been thrown out of work and many consumers of the company's products are shutting down for lack of supplies. The company has 5,000 carloads of material piled up and it is unable to fill orders for materials needed by the railroads, for outside carbuilding plants that are doing work for the railroads, for light rails and car wheels needed by coal mines, nor for agricultural implements. Commissioner Aitchison said the manufacturers of agricultural implements have already turned out more than they can ship.

John Andrew Ronan, representing scrap iron dealers in the Chicago district, and Charles M. Haskins, secretary of the National Association of Waste Material dealers, particularly asked an interpretation of the order to make more specific which types of open cars should be given priority for coal loading, saying that a chaotic situation had been brought about by the varying interpretations.

E. D. Scheffe, representing the Standard Oil Company of New Jersey, said that the shortage of coal and the open-top freight car shortage had reduced the output of pipe for oil wells and pipe lines and for tank steamers, thus curtailing the supply of oil. He urged a modification of the order.

M. O. Eldridge, representing the American Automobile Association, testified that so large a proportion of the nation's freight business now is being hauled by motor trucks that it is practically as important to keep the highways maintained and new construction going forward as it is to keep the railroads running, and he said that many more passengers are carried by automobile than by rail. He insisted that the passenger automobile is a pleasure vehicle to the extent of only 10 per cent, the great proportion of passenger car use being industrial and commercial.

Mr. Willard resumed the stand at the close of the hearing and said he favored an extension of the priority order for another 30 days. He also thought a more exact definition of coal cars would be of assistance. He regarded the lake coal situation as perhaps the most serious one to be dealt with but believed that conferences of the interested carriers and shippers would be able to work it out. He was reasonably optimistic as to the general situation and did not feel that many mills would have to close or remain closed for long. He said the railroads would do everything possible in the way of speeding up the movement of trains, but that new equipment cannot immediately be brought into use nor can the percentage of bad order cars be suddenly reduced.

Mr. Willard said that the reasons for the present shortage of facilities are very largely the same as those which have produced such a demand for coal. The unusual development of productive capacity during the war has resulted in the offer of a great deal more commodities for movement than before the war, and during the war the railroad capacity was not enlarged. Much comment has been made, Mr. Willard said, upon the slow movement of cars through terminals, but he would be glad if any of the gentlemen could suggest a formula for correcting that situation. Under the transportation act the railroads have nothing to do with the settlement of such problems as have resulted in the

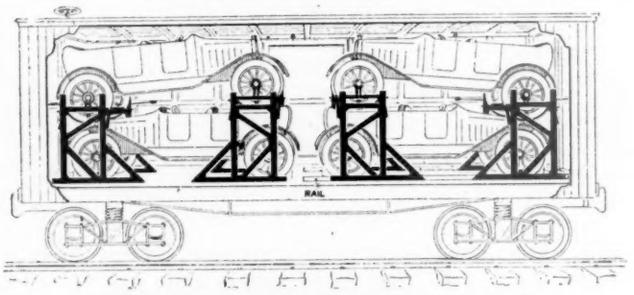
strikes. Commissioner Aitchison asked if there was anything in the act to prohibit him from dealing with the claim of certain classes of employees that they are not getting relatively what they should in wages. Mr. Willard replied that his own construction of the act would be that inasmuch as the whole question of wages has been referred to the Labor Board, he would not feel at liberty to act independently. While he was opposed to it on principle, it was a fact that during federal control there has been put into effect almost a complete standardization of wages all over the country and it would start the upsetting of the whole process again if one railroad should change the wages of some of its employees.

Mr. Willard discussed in detail some of the particular local situations that had been mentioned by shippers and he said that C. H. Markham, president of the Illinois Central, had returned to Chicago with the idea of working out with the shippers a plan for handling the necessary building materials in Chicago. He said he knew of a stone quarry near the city with sufficient capacity to handle all the material necessary, that sand banks to furnish all the sand that is needed are within 20 to 30 miles of Chicago, and there is an enormous cement plant almost within the city limits. He also said that the general superintendent of the Illinois Central at New Orleans would try to work out a plan for meeting the situation there. The sand has to be hauled 100 miles into New Orleans, but if there are 30 city blocks of streets torn up the condition should be remedied, if only from the standpoint of fire protection. He also thought the railroads should be able to furnish enough material to keep existing highways in good repair and he had no doubt it can be done by utilizing the return movement of coal cars. He referred to the arrangements made for a meeting of coal operators and his committee to try to work out a plan for supplying enough lake coal and said that it may be necessary for the commission to give some sort of an order such as assigning cars to the lake service.

In closing the hearing Chairman Clark said the commission realized the utter impossibility of taking any action or even refraining from taking any action which will please everyone. He wished to second Mr. Willard's suggestion that, in so far as it is possible for the shoppers and the carriers to function together in the handling of transportation questions without functioning through the commission, the commission believes that such a plan is conducive to the best results, and when it is impossible to adjust matters in that way, of course they can be brought to the attention of the commission and it will have to assume the responsibility of determining them if within its jurisdiction.

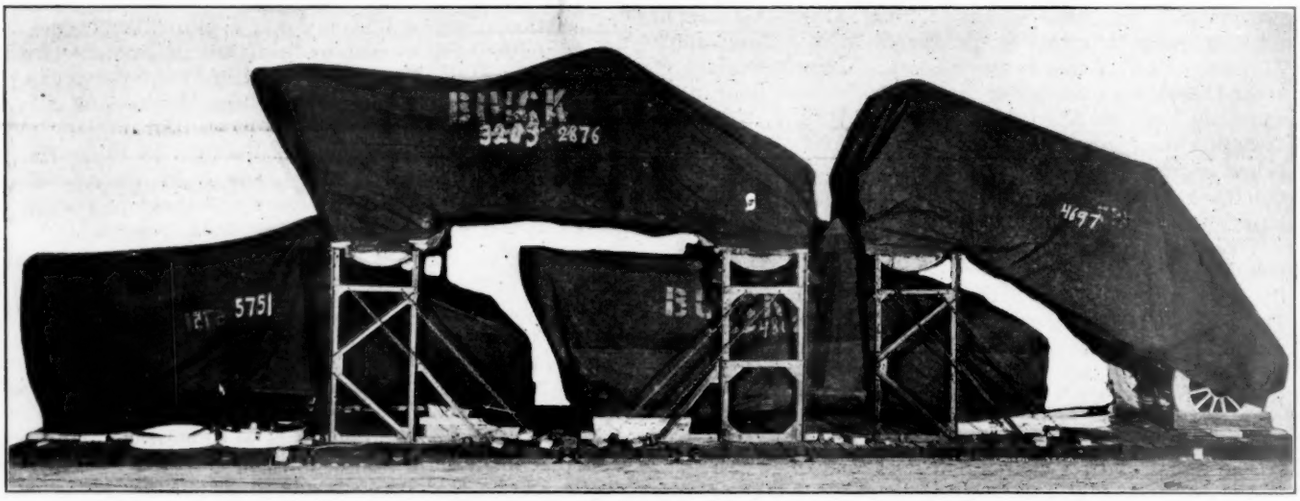
"Carbo" Steel Decks for Carrying Automobiles

THE BUICK MOTOR COMPANY, Flint, Michigan, makes extensive use of steel decks for economizing space in shipping automobiles, increasing the capacity of many cars 100 per cent. The load shown in the picture was one of 50—consisting of 200 automobiles—recently sent from Flint, through Canada, over the Canadian Pacific, to Seattle, Wash. These four machines are on a 36-foot platform car, which, without the decks would have carried only two. All of the automobiles arrived at destination in perfect condition.



Double-Deck Arrangement for Automobiles

This deck is made by the Carbo Steel Products Company, 2600 West 111th Street, Chicago. The Buick Company has in use 2,500 sets of the apparatus, and finds them a good investment. In the month of May the Buick factories were able to send by rail not more than 40 per cent of the automobiles which they made and, therefore, had a strong motive to load every car to its greatest capacity. Where the automobiles standing on the floor of the car weigh, together, less than five tons, there is a saving in freight charges by the use of the "upper story," as five tons is the minimum weight charged for a load on a 36-ft. car.



A Canadian Pacific Car (Mostly Concealed) Loaded for a Trip from Flint to Seattle.

This decking can be used on flat, gondola or box cars. The smaller illustration shows a typical load in a box car. The deck is readily assembled off the car and is easily and quickly lifted into position. The uprights are held in position by chains nailed to the car floor. The manufacturers have prepared minute instructions both for loading and unloading. Four small differential chain blocks are used to lift the automobile. Ropes are used, where and when necessary, to avoid scratching bright parts. A circular of instructions is provided for use in unloading at places where the consignee has no special apparatus.

Railroad Problems of China and Japan

By Geo. R. Henderson

A SHORT TRIP of observation through the principal parts of China and Japan cannot fail to impress an engineer with the great difference in the problems of railway progress which these two countries have to face, and which are extremely important in both cases. In China, there is a large and populous country in which the various sections are poorly united by internal means of communication, with scant railroad facilities and practically no wagon roads, outside of the larger towns. In Japan the country is small, but also populous, the railroads are well located and operated, and many good roads are in existence acting as feeders to the railroads and permitting motor traffic between important centres. China needs many miles of railroad and wagon road construction in order to develop her natural resources, strengthen her military position, and what is of the greatest importance, unite her various sections into a national entity and terminate the ceaseless conflicts between the north and south which at present and in the past have been the greatest menace to her national life and internal development.

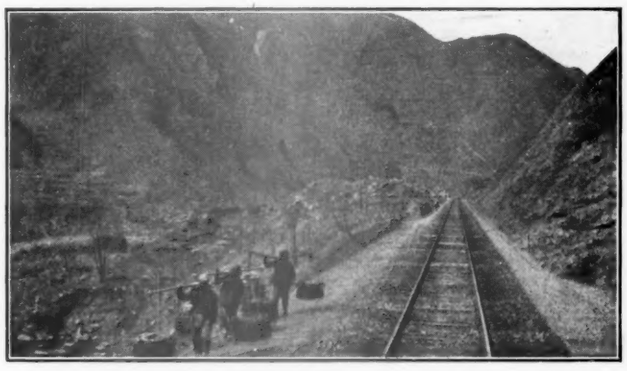
Japan, on the other hand, is a compact and united people, whose religious doctrines as embodied in Shintoism and Buddhism have for centuries strengthened the loyalty and devotion of her citizens to the hereditary ruler, but the traffic has become so overburdened by passengers and freight that relief must be had at once in order to comply with the demand for increased transportation facilities.

A glance at the map shows Japan quite well covered by a network of railroads, especially on the main island, Hondo. Few roads, on the other hand, extend any distance from the coast of China to the interior and these are of various origin. For instance, the short line from Kowloon (opposite Hong Kong) to Canton and about as far beyond, was built by English capital; likewise the line from Shanghai to Nanking and from Pukow (across the Yang-tze from Nanking) to Tsinanfu. From the latter point to Tientsin, the construction was done by German engineers, as well as

A Section Between Peking and the Great Wall Built by Chinese Engineers

the Shantung line to Tsing-Tao. The Peking-Hankow road is French and the lines about Peking, particularly to Kalgan and the Great Wall were constructed by the Chinese. These lines, however, are standard gage, and the cars generally have M. C. B. type couplers and air brakes. A committee is now studying the problem of standardization on invitation of the Chinese government, which operates the lines about Peking, and F. H. Clark, formerly general superintendent of motive power of the Baltimore & Ohio, is considering the equipment part of the program. It is true that river navigation affords considerable communication between interior and coast towns, but it is slow and subject to interruptions by floods and storms. The direction of the river traffic, moreover, is mainly east and west, whereas the most promising results are looked for by connecting the north and south, thereby obliterating the lines of sectional antagonism. Little progress has actually been made on the Canton-Hankow road, although it was prospected many years ago.

The Japanese roads are mainly government properties, but are saddled with several unfortunate features. The gage of track is only 42 inches, and as there are numerous tunnels and heavy cuts, it would be well nigh impractical to change to standard gage. The couplings used are the link and hook (the old English standard) and the passenger



The Two Extremes of Transportation in China

train and engine brakes are of the vacuum type: freight cars are mostly of light capacity (4-wheel) and the majority of the cars have no brake at all, and a few have hand levers to be applied from the ground when the cars are standing. While the islands of Japan are comparatively small, the density of population requires a wider gage, but this is prohibitive—the brakes and couplers could be changed, but expense and trouble would follow; however, it is only a question of time when this *must be done.*

How to provide the proper motive power on a 3 ft. 6 in. gage track is a serious problem, and it is possible that electric traction with multiple unit locomotives will be the most economical solution. On the whole, it seems that the question is easier of settlement for China than for Japan, as the fundamental principles are on a sounder basis. The South Manchuria Railway, operated by the Japanese from Mukden, through Antung and Seoul (Korea) to Fusan is standard gage, with M. C. B. couplers, standard passenger platforms and air brakes and seems like a section of the Pennsylvania railroad transplanted in the old Hermit Kingdom. It is particularly striking when you travel one day over this excellent highway, which is modern and progressive, and the next day ride on the narrow gage trains in Japan.

It should not be inferred from this remark that traveling in Japan is uncomfortable—in fact the road bed is good and well guarded against washouts from near-by rivers, the banks of hills at such places being generously protected by cubical stone blocks, laid up in diagonal ranges, without cement, but locking themselves in place. The passenger trains generally have second and third-class cars, with through corridors and compartments or side seats, like our street cars. First class cars are only used on a few of the express trains, although there are some express schedules of third-class cars only. The local trains average about 25 miles per hour and the express 30 to 35. The limited express which runs daily between Tokyo and Shimoneseki (where passengers take the ferry to Fusan for Korea and China) makes on the average something less than 35 miles an hour and has dining, sleeping and observation cars. These are very comfortable, but the dining car service is not what would be expected on such

a train, being much below the standards of America. The first and second-class cars are clean (except in wash and toilet rooms), but in third-class cars the floors become strewn with orange peels, and between these, rolling empty bottles and the legs of the passengers, which generally extend well across the passage, visits to the diner through these cars are full of uncertainty and discomfort. The men, and often the women smoke in all the cars, but this fumigation is a positive advantage at times. The platform aprons, over the hook and link coupling, vary many inches in height, which is rather dangerous on crooked parts of the road.

In many of these respects the Chinese trains are superior, as the platforms are based upon the American standards and the cars are kept in a much cleaner condition than one would naturally expect. Dining cars are plentifully provided and the meals are edible and quite well served. The speed of trains is about the same as in Japan and the movement is kept close to the schedule.

Our interest would naturally be directed to the portions built by Chinese engineers and the two photographs show the general construction on the Peking-Kalgan line, also the mountainous nature of the country in the region of the Great Wall. The bed is well protected against floods and washouts by cubical blocks and masonry walls, and the rails are heavy (about 80 lb. to the yard) and stone ballast liberally supplied. The heavy (3 per cent) grades are protected at frequent intervals by derails and runaway stops of steep reversed grades, and at each change of grade the slope is indicated on posts.

The needs of China are known to her officials, as a conference with Mr. Chen, Minister of Communications, made clear the fact that greatly enlarged facilities were imperative. When asked by the Minister, at whose request the visit was made, what was China's most urgent requirements, we suggested that trunk lines of railroad to unite the various antagonistic sections of the country and good country roads to develop local traffic and to act as feeders would be the best for all the interest of the people. With a plentiful supply of stone and cheap labor the latter could be easily constructed, but for the former, international assistance will be necessary, and for this purpose, the consortium now being arranged by American, French, English and Japanese bankers will be invaluable.

Express Company Consolidation

A HEARING on the application of the American Railway Express Company for permission to continue its consolidation of the principal express companies after September 1, was held before Examiner Butler of the Interstate Commerce Commission at Washington on July 12. The hearing was delayed in preliminary discussion after Alfred P. Thom, Jr., representing the Association of Railway Executives, and H. G. Herbel, representing the Southwestern railroads, had asked that the hearing be not concluded until the railroads had had an opportunity at meetings to be held at New York during the week to decide as to their attitude toward the proposed consolidation. Mr. Thom merely said that the railroads had no position to take as yet, while Mr. Herbel intimated that the railroads might desire to oppose the consolidation, or even to consider the formation of other express companies, or the undertaking of express service by the railroads. Several representatives of state commissioners and of shippers thought they might not want to introduce their own testimony until they knew the railroads' position, but it was finally decided to proceed and to allow the opportunity for further testimony on July 26.

T. B. Harrison, representing the American Railway Express Company, said he understood the meetings of the executives in New York were concerned merely with the question of the proposed contract to be entered into with the express company.

George C. Taylor, president of the American Railway Express Company, outlined the history of the consolidation and the advantages which would accrue from its continuance, saying he felt confident that a single company would be able to furnish a much better express service than had previously been rendered, with a saving in expense. He admitted that the present service is unsatisfactory, saying that this condition resulted from the effects of war conditions and from the fact that the company has had an uncertain tenure of existence. It has no contracts with the railroads running beyond September 1, it is yet to be legalized by the Interstate Commerce Commission and its stockholders have received no returns since the formation of the company, although the government has guaranteed it against deficit. It cannot raise the new capital required, which he estimated at $31,000,000, for new facilities, until its status is determined.

Mr. Taylor said the economies already effected by consolidation could be definitely figured at $13,000,000 a year and he had no doubt they amounted to as much as $25,000,000, although it had not been possible to check back against the former costs in all cases. He pointed out that legalization of the consolidation would give the company no monopoly unless all the railroads choose to make contracts and even then it would be subject to the regulation of the Interstate Commerce Commission and of the state commissions, whereas to break up the company would lead to a chaotic condition resulting in increasing the present transportation confusion. He thought with an increase in rates and a new lease of life that it would be possible to raise the capital required to improve the plant and build up a dependable and reliable express service and he said the company realized that it was necessary for its own preservation to do this. He said he thought a majority of the larger shippers are in favor of the consolidation but that he had made no effort to get them to appear before the commission to say so and he pointed out that 90 per cent of the company's business is now commercial as most of the small package business is done through the parcels post.

After several other express officials had testified and after cross-examination at length by representatives of shippers and state railroad commissions that are opposing the consolidation, the hearing was adjourned until July 19, when testimony on behalf of the protestants will be introduced. The cross-examination indicated that objection to the consolidation is largely based on the fear that a permanent consolidation would make it impossible to collect old claims against the constituent express companies. It was stated that the Adams and Southern companies have already refused to pay legitimate claims although they have offered to settle all claims for 60 per cent without investigation and that they have withdrawn their agents from many states so that the companies cannot be served and sued except in New York. The Wabash & Missouri Pacific railroads have opposed the consolidation until the Wells Fargo company agrees to pay claims for alleged violation of its contracts with the railroads.

THE PRINCE OF WALES, while traveling in Australia, was in a train accident near Perth, on July 5, according to a despatch to the London Times. The Prince's car, with one other, was dragged on the ties for about 600 feet, and overturned, but he climbed out of a window unscathed and smiling. What happened to the other people on the train is a point on which the press despatch is silent.

A New Plan for Water Service Administration

Union Pacific Organization Insures Co-operation Between Supplying and Using Departments

FOR THE PAST FOUR YEARS, water service on the Union Pacific has been subject to supervision by a special organization which differs in many respects from those maintained on most railways. The plan of organization and the methods and the policies pursued have been instrumental in effecting a marked improvement in the character and quantity of water supplied to the locomotives and are therefore worthy of considerable study. There is also considerable food for thought in the considerations which led the management of the Union Pacific to undertake this new form of organization.

Few roads in this country were confronted with a more serious problem than that which faced the Union Pacific with regard to its water service in 1915. The traffic had increased at such a rapid rate that all the facilities of the system were being taxed to the utmost in spite of generous programs of additions and betterments carried on over a period of several years. The water service problem was especially difficult because the country traversed by the line, except where strictly mountain water is available, abounds in waters containing large quantities of incrusting and foaming compounds and the Union Pacific, like many other roads, had no well-defined organization charged with responsibility for the supply of an adequate quantity of good boiler waters. This was particularly true with respect to the treatment of the water, and had led to several reversals of policy as different departments and individuals succeeded in bringing their particular ideas to bear on the subject. Beginning in 1903, some 35 water-treating plants were installed at various points of the system, the Union Pacific having been among the first roads to take up the treatment of water in the roadside plants. These were operated with varying success during the subsequent years. Certain agencies had tended to interfere with their effective operation, chief among which was the enormous growth of traffic, which rendered many of them too small to meet the demands of the individual stations; so they were gradually allowed to go into disuse and in 1915 only 14 of them were in operation.

The task of rectifying this situation was approached by the management from the position that adequate supervision and effective organization are the two prime requisites for success and that the lack of these had been responsible for the shortcomings in water service on most of the roads that had experienced difficulty in this direction. At the same time it was recognized that no one department could be held solely responsible; thus the engineering and maintenance of way departments must prospect for, construct and operate the plants supplying the water, the mechanical department uses the water and is affected by its quality, while the operating department is charged with its cost.

In the face of these conflicting interests, it was decided to organize a special water service staff or bureau responsible directly to the general manager which would be charged with two distinct functions: (1) to exercise technical control over the complex problems of water supply and treatment, and (2) to reconcile the conflicting interests and views of the various departments of the road which were, of necessity, concerned with this problem. It was recognized that this was primarily a problem for the chemical engineer. This work was organized under the direction of Dr. William M. Barr, with the title of consulting chemist, reporting to the general managers of the Union Pacific, the Oregon Short Line and the Oregon-Washington Railroad & Navigation Line, and he developed a small staff designed to meet the needs of the peculiar duties imposed upon it.

This organization is not committed to any particular school of water treatment. The policy is to institute the particular measures in each individual case which a thorough study indicates would best suit the conditions. Under this policy recourse has been had to both water softeners and boiler compounds, each under the circumstances that indicated their special applicability.

The Organization

The organization created to handle the work under the direction of the consulting chemist was not built up according to any predetermined plan. Instead it was designed to suit the capabilities of the men best fitted to become a part of it. An effort was made to recruit the men as far as possible from the company's forces. There is a principal assistant in direct charge of the water softener operation who is engaged also in the investigation of new water supplies. Subordinate to this principal assistant are two traveling chemists and a pumping station or mechanical supervisor, the first two being engaged in a systematic check and supervision of the water treatment at the various plants and the last named in general investigation of the mechanical operation of the plants.

The consulting chemist has three other assistants, who report direct to him, two assistant chemists and the foreman of the company's factory for the manufacture of boiler compounds.

The consulting chemist's organization ordinarily takes the initiative in new projects for the development or enlargement of water supplies. The actual design and construction of the new plants or improvements of old ones is carried out by the maintenance of way department or, on terminal work and large improvements, by the engineering department, but the consulting chemist or his assistants keep in close touch with the work to insure that the plan originally agreed upon is carried out. If the project includes a water softener, one of the traveling chemists is called upon to adjust the treatment when the plant is placed in service and to give it close supervision until the water has proven satisfactory to the motive power department.

The water stations and treating plants are operated and maintained by the maintenance of way department and the pumpmen and repairmen report to the water service foreman, who in turn is responsible to the bridge and building supervisor, but the pumpmen who operate softeners are under instructions to follow any directions given them by the travel-

ing chemist regarding the treatment. Copies of any complaints from the traveling engineers or others regarding the behavior of the water are sent by the motive power department to the consulting chemist and the situation is carefully studied, and any corrective measures taken are watched until satisfactory results are obtained.

Extensive use is made of boiler compounds for overcoming the incrusting solids in the water in cases when the amount is too small to warrant the installation of a softener, and also for immediate or temporary relief until such time as the water may be softened or abandoned. Anti-foaming compound is issued to the engine crews the same as oil and waste, and they are permitted equal latitude in its use. As referred to above, one activity of the consulting chemist's department has been the manufacture of boiler compounds.

A Conservative Policy Is Pursued

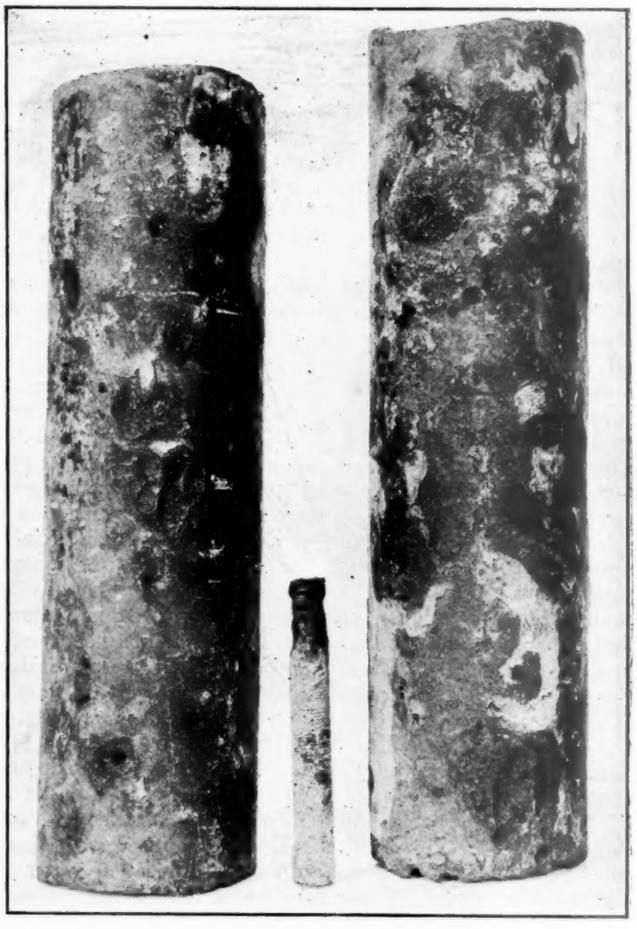
The policy of the Union Pacific under its new organization for water service may in general be said to be conservative. No project has been started until the matter could be thoroughly investigated. Wholesale improvements have not been undertaken, yet at the same time, by following a consistent plan, many extensive improvements have been made. Each engine district has been studied in turn, but instead of attempting to obtain perfection on one district at a time, efforts have been directed to the improvement of water at the principal stations, leaving a few cases to receive further consideration later. In a general way, the initial object has been to obtain about 75 per cent efficiency on the entire road before directing attention toward further perfection on any one district. Because of the greater demands of traffic, attention has been directed primarily to the Union Pacific to start, but the work is now developing on the other parts of the system.

In this connection it is of interest to review the policy pursued with respect to the water softening plants. When the new department was organized in 1916 there were records of 35 softeners on the road, of which only 14 were in operation. The other 21 were either standing idle or had been dismantled. This situation was approached with an open mind. It was not assumed that these plants had been wrongfully withdrawn from service, neither was it considered that the plants were entirely responsible for the conditions leading to their abandonment. From a general study of the situation, several reasons have been disclosed for discontinuing the use of these softeners. Many of the plants were installed at the very beginning of scientific water treatment on railroads, with the result that some of the installations were ill-advised. Attempts were made in some cases to soften water which it was impractical to use in the boilers after treatment. Most of the plants also were installed on lines of very rapidly growing traffic, so that many of them were soon required to handle far greater quantities of water than they had been designed to treat properly. As a result of the investigation, 14 of the 21 plants out of use in 1916 have been abandoned permanently, while seven of them have been restored to service. In the meantime, investigations have developed the necessity for a number of new plants, several of which have been built and others are contemplated.

First Look for a Good Water

One rule followed in the study of the individual plants is that it is much better to find a water that does not require softening than it is to install a treating plant for water that is obviously in need of treatment. As a consequence, very extended surveys have been made to discover new sources of water, and the efforts in this direction have been rewarded with no small degree of success. Each case is considered as an individual problem instead of subjecting it to a general formula. As a consequence there has been a wide variety in the measures taken to obtain improved water at the different stations. Thus, at North Platte, Neb., and Grand Island, treating installations were avoided by obtaining new supplies, but at Council Bluffs, Ia., it is planned to improve conditions by replacing the existing water softener by a new one of sufficient capacity to meet present demands and treat all the water used by the locomotives.

In the development of supplies all the requirements have been taken into consideration, so that while the quality of water to be obtained has been the paramount feature, the question of quantity and operating cost has always been considered. Surface supplies have been brought in by gravity lines and by pumping where necessary. Wells of all depths up to 1900 ft. have been developed where conditions indicated that a good supply could be obtained and where this was the only source of supply.



Superheater Flues and Staybolt Corroded by Water Containing 75 Grains of Alkali Chlorides and 20 Grains of Incrustants. This Water Was Replaced by One Containing 2 Grains of Alkali Chlorides and 5 to 7 Grains of Incrustants.

The results from this plan of organization and policy on the Union Pacific have not been spectacular. Instead a steady, permanent improvement has been made with the personnel of all departments generally satisfied that the policy pursued is producing results and that further progress will be made as conditions warrant. The initial efforts having been directed very largely toward the elimination of unsatisfactory waters by such improved supplies as could be discovered, further improvements must, of necessity, consist more largely in some method of treating existing supplies. The field for the development of new supplies, however, is far from exhausted.

Transportation Situation Slightly Improved

Coal Operators and Railway Executives Co-operating
Difficulties in Grain Section

THE TRANSPORTATION SITUATION continues to be exceedingly serious throughout the country, although there has been some improvement in the movement of fuel and other commodities, particularly in the eastern district. The local car service committees are doing splendid work in helping to clear up the congestion and in facilitating the movement of traffic. Many manufacturing plants are in much the same situation as the steel industry, the condition in which was clearly developed at the hearings before the Interstate Commerce Commission which are reported on another page. Many industries are finding it impossible to secure sufficient raw materials to keep their plants working at capacity or to ship their finished products.

There has been a considerable increase in the movement of coal to the New York district within the past week and there now appears to be no danger of a shut-down of the public utilities which was so greatly feared last week.

On Wednesday a committee of bituminous coal operators met in New York with the advisory committee of the Association of Railway Executives. The entire situation was gone over thoroughly, a general plan of operations was considered, and sub-committees were appointed which will immediately work out such details as may be found advisable in order to secure the greatest possible relief.

It is expected that the modification of Service Order No. 7, reported elsewhere in this issue, will afford a considerable relief to the iron and steel industry. Mr. Willard's remarks at the end of the hearing before the Interstate Commerce Commission, reported in the same article, indicate the steps which will be taken to improve the situation for stone, gravel, sand and other road and building materials.

Chairman Cuyler Urges Greater Efforts

Thomas De Witt Cuyler, chairman of the Association of Railway Executives, in recognition of the existing critical transportation situation throughout the country, has sent out a circular letter to member-roads urging them to do everything in their power to (1) return home cars to home roads wherever possible, (2) repair bad-order cars and locomotives to the utmost of their physical and financial capacity and (3) increase the average car mileage. With regard to the increase in car mileage and the general speeding up of train movement, the facts are cited that if the average car mileage be increased to 30 miles a day an increase of approximately 25 per cent in the gross transportation capacity of the railroads would be effected.

Grain Movement in the West

With the 1920 wheat crop, estimated by the United States Department of Agriculture at 780,543,000 bushels, practically ready to move in volume, the tense transportation situation and car shortage in the Central West remain practically unchanged from their status of the past month. The emergency relocation orders, one issued by the Interstate Commerce Commission, and directing the movement of approximately 20,000 serviceable empty box cars of western road ownership from eastern to western railroads during a period of 30 days, and the other issued by the Commission on Car Service for the movement to western roads of approximately 28,000 box cars on a 30-day schedule, have resulted in inducing railroad men, shippers and farmers in the wesern states to take a more optimistic view of the situation. The western lines have reported that 15,500 of the 20,000 cars ordered west by the Interstate Commerce Commission have been received, and 4,500 are reported as still in transit. The westward movement of the 28,000 box cars, ordered by the Commission on Car Service, is not yet fully under way. Those cars which already have been placed in western grain states have been absorbed so rapidly that the relief they have afforded has not been very apparent.

The size of the country's grain crops this year, while not as large as in 1919, means that the western granger lines have strenuous work ahead of them. The Department of Agriculture's forecast for the year's production of wheat is 780,543,000 bushels, as compared with 940,987,000 bushels in 1919. The forecast for oats is 1,315,476,000 bushels, compared with 1,248,310,000 bushels in 1919. The forecast for barley exceeds the crop of 1919, as does the forecasts for several of the smaller crops. In addition, on March 1, 1920, the Department of Agriculture reported that 165,539,000 bushels of wheat, or 17.6 per cent of last year's crop, was still on the farms, as compared with 14 per cent in 1919; 118,626,000 bushels, or 12.6 per cent, was in country mills and elevators, as compared with 11.8 per cent in 1919; 37.4 per cent of the corn crop was still on the farm, 33.9 per cent of the oat crop and 22.9 per cent of the barley crop.

When it is recalled that in 1919 at this time 35,000 cars suitable for grain loading were being held in storage in the Central Western region, 27,000 in the Southwestern region, and 4,000 in the Northwestern region, awaiting the grain movement, it can readily be seen that the movement of this year's crop will entail strenuous action both on the part of the co-operative commissions and the carriers. Another unfortunate factor is the condition of much of the equipment supposed to be suitable for grain loading. Many cars, which because of deferred repairs, are really unfit for this traffic will serve only to aggravate the situation.

During the past six weeks, substantial reductions have been made in the visible supply of grain in public and private warehouses at the principal markets.

The Movement of Coal in the West

The movement of coal in the western states showed slight but continued improvement during the past week. The situation in the Northwest is particularly acute, the slump in the shipments of coal by water seriously diminishing the tonnage usually stored at the head of the lakes.

The Relation of Western Cars on Line to Ownership

The general situation in the western states is reflected in the proportion of the cars on line in relation to the number of cars owned. On June 15 the western roads had but 88.3 per cent of their ownership of box cars and 97.7 per cent of their total cars owned, as compared with 105.9 per cent and 107.2, respectively, on the corresponding day last year. The Central Western district had 91.4 per cent of its box cars and 97.5 per cent of all cars, as compared with 106.1 per cent and 104.8 per cent, respectively, a year ago. The Southwestern district had 101 per cent of its box cars and 106.2 per cent of all cars, as compared with 104.1 per cent and 100.3 per cent, respectively, last year. This situation will undoubtedly be corrected to some extent by the recent orders to move empty cars westward. This relocation of equipment is planned to take the place of the storage of cars which was possible last year. However, this relocation is a forced movement and will therefore require intensive co-operation among the carriers to be successful.

Frank Trumbull

FRANK TRUMBULL, who in January last resigned as chairman of the board of directors of the Chesapeake & Ohio and the Hocking Valley, died at Santa Barbara, Cal., on the evening of July 12 of heart disease. He was 62 years of age and his death followed a long period of ill-health.

Mr. Trumbull was in railway service practically continuously from the time when at 12 years of age he went to work as a water boy on one of the new railways in the Southwest. He was born at Arcadia, Mo., in 1858, of New England stock, his father being a minister. He had no opportunity to secure the usual grade school education, but worked as water boy and at similar jobs on the railway from the age of 12 to 16, and then entered the office of the controller of the Missouri, Kansas & Texas as a clerk. For the next 14 years he worked up step by step through the accounting offices of the Missouri, Kansas & Texas and the Missouri Pacific, until in 1886 he was appointed auditor of the Texas & Pacific.

He then left railway service for five years, beginning in 1888, and engaged in the wholesale coal business in Colorado. He did not lose his connection with railway work during this time, however, because he also found time to make reports on various western coal properties for banking concerns in New York and London.

Returning to railway service in 1893, he was appointed receiver of a bankrupt branch of the Union Pacific, known at that time as the Union Pacific, Denver & Gulf. In this new task first he began to make his reputation as a rebuilder and financier. Working in association with Grenville M. Dodge, and later with Edwin Hawley and the Huntingtons, he developed and extended the line connected it with the Fort Worth & Denver City and otherwise improved it. In 1899 the property had become independent and was organized as the Colorado & Southern with Mr. Trumbull as president and Mr. Dodge as chairman of the board of directors. Mr. Hawley became a member of the board of directors in 1902. Mr. Trumbull remained in charge of the Colorado & Southern until 1909 when he effected a sale of a controlling interest in the property to James J. Hill.

Frank Trumbull

The improvements that had been made in the property in the years during which Mr. Trumbull was interested in it, namely, from 1893 to 1909, furnish no small amount of tribute to the skill in management which Mr. Trumbull manifested in bringing the road to a high level. In 1893 the road had about 1,000 miles of line and earned in that year $3,500 a mile gross. The mileage of the road on June 30, 1908, was 1,952. The operating revenues for the year ending on that date were $14,281,000 and the operating incomes amounted to $4,635,000. The operating revenues amounted to $7,393 per mile. The company had no floating debts and was paying regular dividends on its first and second preferred stock.

From 1908 to the end of 1919 Mr. Trumbull was chairman of the board of the Chesapeake & Ohio and the Hocking Valley. A large interest in the former had been relinquished by the Pennsylvania Railroad and was being held for the time being by the banking firm of Kuhn, Loeb & Co. Several of Mr. Trumbull's associates induced him to join with them in purchasing this stock and after doing so he was made chairman of the board of directors of the company. He also managed at about the same time to secure for the latter a controlling interest in the Hocking Valley which although it does not connect directly with the Chesapeake & Ohio has proved a profitable property for it and has helped it in handling traffic to the central and northern part of Ohio. Similarly the Chesapeake & Ohio was able to purchase the line from Cincinnati to Chicago now known as the Chicago Line of the Chesapeake & Ohio.

Mr. Trumbull and his associates did not own a majority of the stock of the Chesapeake & Ohio and the other interests retained a voice in the management of the property. The development of the property was somewhat slow and in 1910 the road had difficulty in raising all of the new capital which could have been spent advantageously on the road. Nevertheless, despite these handicaps, Mr. Trumbull managed to carry out his broader policies and developments and finally succeeded in making the Chesapeake & Ohio the splendid property it is today.

Mr. Trumbull had a strong realization of the broader problems confronting the American railroad manager. He was largely instrumental in the formation of the Railway Executives Association, now known as the Association of Railway Executives. This was formerly known as the advisory committee of railway executives and Mr. Trumbull was its first chairman.

The details in this brief sketch of Mr. Trumbull's career and the amplification of it which will be found in the article concerning Mr. Trumbull's career which appeared in the *Railway Age* of January 9, 1919, will easily point out his ability as a railway manager, as a developer and as a financier. It should be added that Mr. Trumbull by the work done in the later years of his life, demonstrated that he also had the qualities of a diplomatist and statesman. To a high degree he showed great ability in outlining constructive plans for improving railroad regulation and in presenting the case of private operation and intelligent regulation to the public in an attractive, persuasive and convincing manner. When the Esch-Cummins Bill was under consideration he differed from the majority of his colleagues among the railway executives in believing that the railway companies should ask for some form of guarantee of net return from the government. Because of ill health and also

because of this difference of opinion with his colleagues, he withdrew from active participation in the discussion of the railroad question in which he had been for years a leader. In the passage of the Esch-Cummins Bill, however, he had the satisfaction of seeing, only a short time before he passed away, most of the principles which he had long advocated crystallized into law. No man had a greater part than he in forming the public opinion which finally caused this legislation to be adjusted.

All of Swiss Federal Railways to be Electrified

ANOTHER BIG step has been taken in electrifying the Swiss Federal Railways. The Swiss Government has floated a $25,000,000 loan in the United States, consisting of 20-year, 8-per cent sinking fund gold bonds. The proceeds of this loan are to be used in the United States and the loan is a part of a program for the gradual electrification of the government railway systems of Switzerland. This is the highest coupon rate ever carried by a foreign government loan issued in this country. The last previous issue, which was a Belgian government bond, had an interest coupon of 7½ per cent. The issue of $30,000,000 of Swiss government bonds put out almost a year ago had a coupon rate of 5½ per cent, and at the offering price yielded 6 per cent.

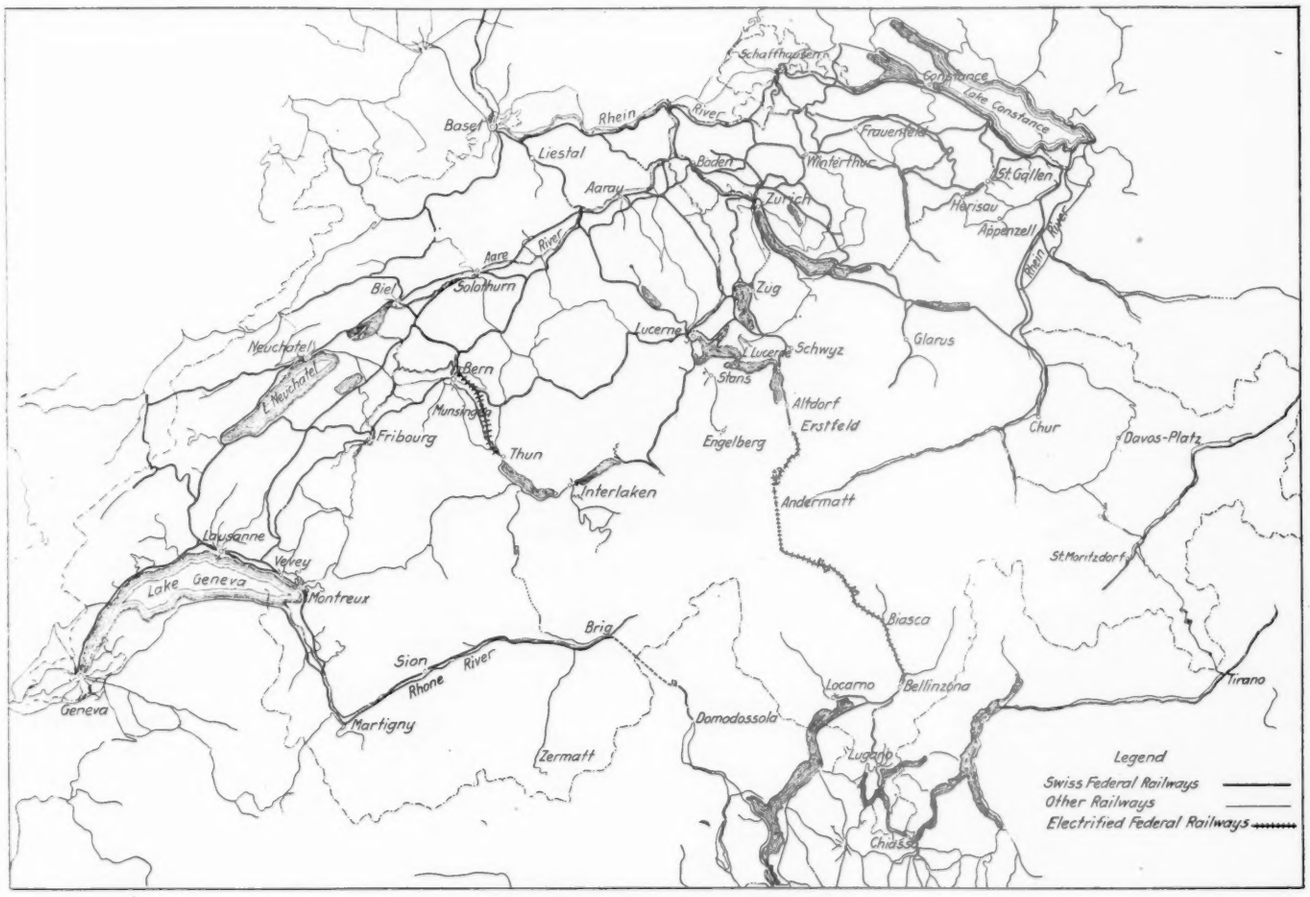
The syndicate which offered the loan is headed by Lee, Higginson & Co., 43 Exchange Place, New York. The bonds were offered on Tuesday, July 6, and subscriptions were closed at noon on the following day.

The Swiss Minister of Railways has stated that it is not wise to wait the return of normal conditions before electrifying the railways, because the coal scarcity will probably last for many years.

Small Part of Federal Lines Now Electrically Operated

There are a total of 3,300 miles of railway in Switzerland, of which 1,900 miles are owned by the Swiss Confederation. These include the principal arteries of the Swiss railway system. Of the 1,400 miles owned by private companies, 622 miles are electrically operated. At present only two of the important federal standard gage lines have been electrified. The first was the line from Bern to Thun, a distance of about 20 miles, which was opened for operation in May, 1919. This line connects with the privately-owned Bern-Lötschberg-Simplon Railway and trains are hauled by electric locomotives direct from Bern to Brig. From 5 to 7 through passenger trains and 3 freight trains are operated each way per day over this line.

The second federal line to be electrified was the line from Erstfeld to Bellinzona, a distance of 68 miles. The electrification of this line was approved in 1913 and the work is now practically completed. This section, with 28 per cent of its length consisting of tunnels and a grade of 2.5 to 2.7 per cent for 25 miles, takes care of a large amount of traffic with Italy. It is expected that the electrification of this line will soon be extended from Bellinzona to Chiasso and from Erstfeld to Lucerne.



Principal Railways of Switzerland

Power Supply

Efforts will be made to use a maximum amount of water power for the operation of the railroads. It is estimated that there is now available a total of 2,700,000 h.p. in water

power and that if present plants were replaced with new ones and provisions made for controlling the headwaters that this might be raised to a total of 8,000,000 h.p.

Power for the Bellinzona-Chiasso and Erstfeld-Lucerne lines will be obtained from the power plants at Amsteg and Ritom. The Amsteg power house will afford 26,000 h.p. and the Ritom power house 32,000 h.p. and they may be used as the power supply of these lines even if the traffic increases 60 or 70 per cent.

In 1919 the Swiss Federal Railway accounts showed that the deficit had increased from $14,355,000 in 1917 to $41,510,000 in 1918. This was due to increased wages, pensions and the cost of all materials, but above all to the enormously increased price of coal during the last six months of 1918.

Equipment

All of the locomotives on the federal lines are designed to operate on 15,000-volt, low frequency, single-phase power supplied to them from an overhead wire. Four different types were delivered to the railroads in 1919. Two of these were ordered from the Ateliere de Construction Oerlikon, of Oerlikon, Switzerland, and two from Brown Boveri & Co., Baden, Zurich. Each company supplied one passenger and one freight locomotive. The mechanical parts of all of the locomotives were supplied by the Swiss Locomotive & Machine Co., Winterhur, Switzerland.

The same method for transmitting power from the motors to the driving wheels is used on all four locomotives. The motor pinions engage gears on jack shafts, which in turn are connected to the driving wheels by side rods. The side rod arrangements designed by the two companies are distinctly different. The two Oerlikon locomotives are of the 2-6-2 and 2-4-4-2 type and weigh 91 and 113 tons, respectively. The two Brown Boveri locomotives are of the 2-4-4-2 and 2-6-6-2 type, and weigh 118.5 and 133.5 tons respectively.

Electric regeneration has been tried and found to be entirely satisfactory on these locomotives. This was the first practical application of regeneration to locomotives using single-phase series motors. The system first tried was that of the Maschinenfabrik Oerlikon.

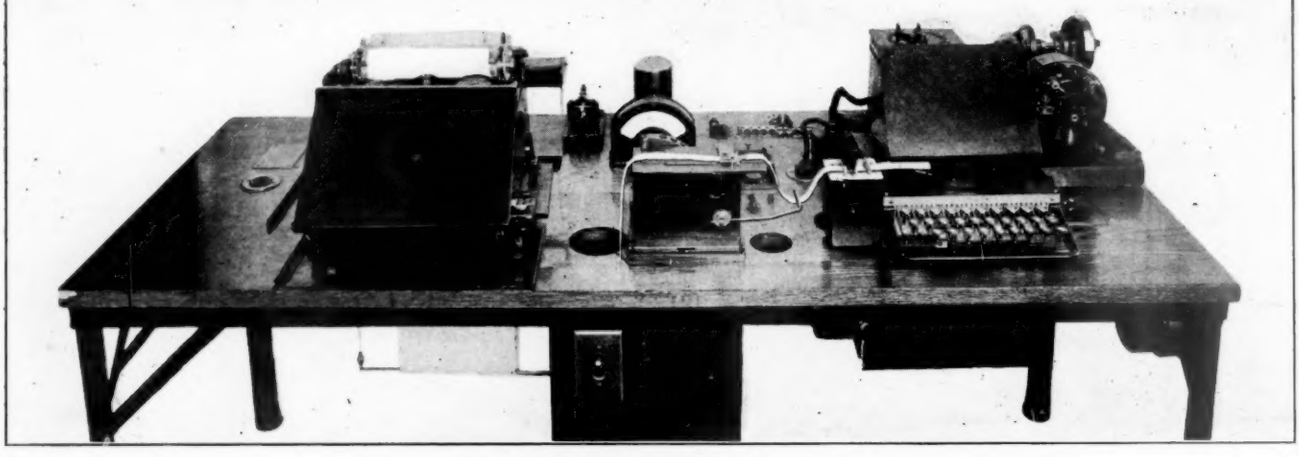
The cost of electrifying the Erstfeld-Bellinzona Railway has been estimated to be $8,000,000 and the cost of electrifying all of the federal railways has been estimated roughly at $200,000,000. The satisfaction given by the American equipment will undoubtedly determine the matter of floating more loans for this purpose in the United States.

The Kleinschmidt Printing Telegraph

The Kleinschmidt Electric Company, New York City, is now putting on the market an improved form of its automatic printing telegraph apparatus, simplified in construction, capable of increased speed and fitted with various improvements. The illustration shows a typical set for transmitting and receiving where the wire is worked duplex.

The message to be sent is prepared on a tape, as in other rapid telegraphs, the operator doing the perforating by means of keys on a standard typewriter keyboard, minus the lower-case letters. The Baudot multiplex code is used.

The automatic transmission of messages over the line is regulated, to correspond with the speed maintained by the operator, by means of an automatic switch. After the operator has perforated four or five inches of tape, the beginning of the message is inserted in the transmitter (in the middle of the table) and the switch lever (a light bent wire) then rests on the tape. Assuming that the operator works as fast as or faster than the transmission speed of the wire—60, 70 or 80 words a minute—there is an accumulation of slack in the tape and the lever remains in its lowest position, as shown in the illustration. The transmitter now functions. If the operator completes the messages on hand, or operates at a lower speed than the impulses are sent out over the line, then the tape tends to become taut; and this lifts the lever and thereby cuts out the transmitter from its circuit. Later, when a new supply of tape has been prepared, that part of it between the machines again becomes slack; and by the movement of the lever downward the transmitter is started again.



The Kleinschmidt Printing Telegraph

The transmitter sends negative and positive impulses through the distributor to the line. These are received at the receiving end by a polar relay and the distributor there controls the local receiving circuit. With duplex working the printer needs but little attention, and the transmitting operator has time to act as receiving operator, tearing off the incoming messages as they are completed.

A Morse key and sounder are provided for use in balancing the duplex, but the bell signals on the printer can also be used for signaling from station to station.

This apparatus is sold direct to users. In tests carried out for a period of four months these printers have worked continuously to the extent of turning out 56,000 words without errors. Hindrances from operating difficulties were practically negligible. The apparatus works at a lower line frequency per letter than other printing telegraphs and there is, therefore, less liability to interruptions.

General News Department

Three express messengers have been apprehended at Gainesville, Fla., pending investigation of the robbery of an express car of southbound Atlantic Coastline train No. 39, near that city, on July 9. John Holder, messenger in the car that was robbed, was found bound and gagged and a sum said to approximate $5,500 was missing.

Trainmen at Pine Bluff, Ark., at a meeting called by organizers of the St. Louis Yardmen's Association, one of the "outlaw" labor organizations, suddenly decided to remain loyal to their employers and consequently hustled the organizers into a motor car and took them out of town, destination unknown.

The Long Island during the first six days of July carried 2,018,653 passengers, exceeding by 10 per cent the record made in 1919 for the July 4 holiday business. On the steam and electric trains 1,789,900 people were taken care of, as follows: July 1, 220,100; July 2, 245,200; July 3, 344,300; July 4, 340,800; July 5, 364,100; July 6, 275,400.

The appointment of a committee of northwest officials and business men to request government orders for prompt coal deliveries was decided on at a meeting of the Minnesota Railroad and Warehouse Commission held at St. Paul, Minn., on July 7. It was pointed out that this district faces a serious fuel shortage unless immediate steps are taken to relieve the situation.

Trial of four employees of the American Railway Express Company in court at Charleston, W. Va., recently brought out the statement that during the last two months the losses of the company by theft at points on the Chesapeake & Ohio, between Richmond, Va., and Cincinnati, Ohio, amounted to $100,000. One of the men arrested was an employee of forty years' standing. The entire office force of the company in Charleston was changed.

Train No. 1, of the Minneapolis & St. Louis, running between Des Moines, Iowa, and Minneapolis, Minn., was in an accident near Arnold, Iowa, on July 3, due to a tank derailment 50 feet south of Bridge 131. Eight persons were killed and about 25 were injured. The ties and track on the bridge were torn up by the derailed tank causing the entire train to buckle, toppling some of the cars and breaking down the bridge structure. Investigation showed that the track and equipment had been in good condition.

Twenty-one passengers were killed in a double collision on the Lackawanna & Wyoming Valley (electric) road near South Pittston, Pa., on the evening of the third of July; and about 100 passengers were injured. The conductor of one of the cars was killed. The leading car is said to have been stopped by an obstruction on the track or the failure of power, due to lightning; and a second car, having collided with this, was itself run into a few minutes later by a "limited" car. Explanation of the cause, so far as published, indicates that dependence for safety was placed on a flagman who did not go back.

The American Short Line Railroad Association is proceeding with the organization of its new departments authorized at its meeting in April. J. F. Gavin, heretofore traffic manager of the Kansas City & North Western, has been appointed assistant to the vice-president in charge of the traffic and tariff department, with office at 216 Bond building, Washington, D. C., and the association is arranging for the organization of a legal department, under the direction of B. B. Cain, general counsel, and of a purchasing department. T. F. Whittelsey, secretary-treasurer of the association, is acting manager of the purchasing department.

Perishable Freight Division of A. R. A. Established

The American Railroad Association has announced the establishment, effective July 1, of a perishable freight division with E. F. McPike, manager of perishable freight service of the Illinois Central, as chairman, with headquarters at 431 South Dearborn street, Chicago.

This step is taken in accordance with a recommendation of the Inter-State Commerce Commission. The new division is created 'for the purpose of investigation and handling of perishable freight matters within its scope and to co-operate with and co-ordinate the efforts of all the departments of the railways in handling perishable freight matters."

The details of organization are now being worked out and conferences have been invited with other interests involved.

Railroad Committee, U. S. Chamber of Commerce

The Chamber of Commerce of the United States has announced the membership of its railroad committee for 1920-1921 as follows: George A. Post, New York, N. Y., chairman; F. C. Dillard, Sherman, Texas; Emory R. Johnson, University of Pennsylvania, Philadelphia, Pa.; George W. Simmons, Simmons Hardware Company, St. Louis, Mo.; A. W. Smith, special counsel, United States Railroad Administration, Washington, D. C.; Edward J. Frost, 426 Washington street, Boston, Mass.; Charles E. Lee, Commission on Car Service, Washington, D. C.; William W. Salmon, president, General Railway Signal Company, Rochester, N. Y.; Walter S. Dickey, Kansas City, Mo.; Harry A. Wheeler, Union Trust Company, Chicago, Illinois. Mr. Post has been chairman of the committee during the past year.

N. R. A. A. Exhibit

The National Railway Appliances Association has sent a notice to the members announcing that the 1921 exhibit will be held at the Coliseum and Annex, Chicago, on March 14-17, 1921, at the same time that the American Railway Engineering Association will hold its annual convention and the Signal division of the American Railroad Association will hold its spring stated meeting in that city. While the attendance at the exhibit last March greatly exceeded that of previous years, reaching a total of 22,612, plans are being made to accommodate a still larger number of visitors next year. The officers are also arranging for an increase in the amount of floor space occupied by the next exhibit and are working on a number of other plans to increase the value of the exhibit as an educational medium for those engaged in the construction and maintenance of railway tracks, structures and signals. In view of the inability of numerous firms to secure space at the last minute in recent years, the president of the association urges that all members and other interested railway supply manufacturers make reservations promptly with C. W. Kelly, secretary-treasurer, 122 South Michigan avenue, Chicago.

Increased Freight Rates Expected in Canada

"The $33,000,000 deficit of the Canadian National Railways during the past fiscal year may be considered the biggest single agency liable to bring about an increase in freight rates," according to S. B. Brown, assistant manager of the Transportation Department of the Canadian Manufacturers' Association, with headquarters at Toronto. "But another and not so generally known is that the Canadian Pacific, the king among railroads as far as efficiency is concerned, boasted a net surplus of about $840,000 in the past year's operations. This is, in the opinion of transportation men, far too small. The Canadian Pacific's proportion of operation expenses to revenue ran somewhere in the neighborhood of 85, when American railway economists insist that 70 is getting to the

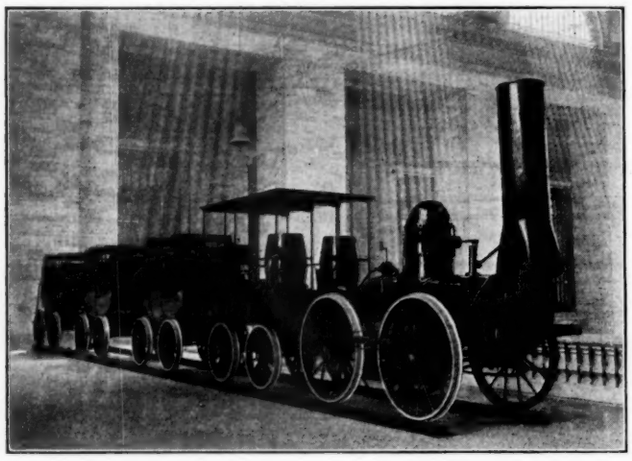
danger point. So when the superior organization of the Canadian Pacific, compared to the average American road at the present time, is considered it is clear that the Canadian Pacific will also be forced to look for an increase in rates.

"The American roads applied for an increase of from 25 to 35 per cent, which, according to their financial statement, seems justified. But I scarcely think that when the Canadian roads ask for their increase they will expect that much, although it is declared that 50 per cent more revenue would hardly place the government road on the right side of the ledger, even counting the Grand Trunk Pacific as a colonization road and not as a commercial proposition."

New York State's First Railroad Train

The DeWitt Clinton, the first locomotive to run in the state of New York, and now familiar to most people because of its exhibition at the Chicago World's Fair and other places, has been installed in the east gallery of the Grand Central Terminal, New York City, where it is in full view of the thousands of passengers passing through the grand concourse of that station daily.

The historic trip made by the DeWitt Clinton was from Albany to Schenectady in August, 1831. The engine was built by the



The DeWitt Clinton Exhibited in Grand Central Terminal

West Point Foundry Company and made its first trial trip on August 3.

The engine has been rebuilt several times and the tender and the cars, shown also in the picture, have been fixed up and painted so as to look like new. As it now stands the engine weighs 9,420 lb.; and each of the coaches weighs 3,420 lb. The length of the engine is 12 ft. 10 in.; of the tender 10 ft. 11 in.; and of each coach 14 ft.

Signal Division Meets

The Signal Division of the American Railway Association opened its twenty-fifth annual gathering at Alexandria Bay, Thousand Islands, on Wednesday morning of this week. There were over 500 members and guests present, thus making it the largest meeting for several years. President C. J. Kelloway, Atlantic Coast Line, in the opening address paid a warm tribute to the early members of the association who had built it up so that it is now regarded as the highest authority in its field. Its Manual now classifies 7,000 subjects and contains 1,200 standard designs.

President Kelloway voiced the feeling of a great majority of the members that the division ought to be self-governing, subject only to the executive committee of the American Railway Association. He urged that the younger members participate in the discussions, that the committee work be done more fully and thoroughly and that the chairmanships of standing committees be limited to five years. He also urged taking steps to improve the sectional meetings at which maintenance problems and rules should be discussed by the men who actually do the work. The American signal engineer has been a pioneer, but the time has come when the universities should develop men for this profession.

Following the president's address, a report of a special committee, consisting of W. J. Eck, superintendent, signal and electrical department, Southern Railway, and A. H. Rudd, chief signal engineer, Pennsylvania Railroad, was adopted authorizing the continuance of negotiations with the railway executives and the American Railway Association, looking to a reorganization such as was outlined at the Chicago meeting last March. The resolution empowers the committee of direction to confirm the informal negotiations during the past two months, to conclude the reorganization as outlined by the president, and to adopt these new plans tentatively until approval can be had by letter ballot next year.

Timetable Ninety Years Old

The press now co-operates cordially with the railroads in promoting the best transportation service, and statistics show that this is no new thing. The Baltimore & Ohio Magazine calls attention to an example of such co-operation in 1830, more than ninety years ago. It is in the shape of a facsimile of the first timetable issued by the Baltimore & Ohio on May 20 of that year; and it appears in the *editorial column* of the Baltimore American. Following a brief note, printed at the head of the first column, the American gives the official timetable issued by P. E. Thomas, president of the railroad. It says:

NOTICE IS HEREBY GIVEN, That the Railroad between Baltimore and Ellicott's Mills will be opened for the transportation of passengers, on MONDAY, the 24th inst.

A brigade, or train coaches, will leave the Company's Depot on Pratt Street, and return, making three trips each day—starting at the following hours precisely, viz:—

Leave Baltimore at 7 a. m. and Ellicott's at 9 a. m.
Leave Baltimore at 11 a. m. and Ellicott's at 1 p. m.
Leave Baltimore at 4 p. m. and Ellicott's at 6 p. m.

The price for the trip of twenty-six miles will be seventy-five cents for each person. Additional carriages will be furnished if the business warrants.

Railway Returns for Three Months

The Interstate Commerce Commission has issued the following compilation of railway revenues and expenses for the three months ended with March:

Item	Amount 1920	Amount 1919	Per mile of road operated 1920	Per mile of road operated 1919
27. Average No. miles operated	234,603.77	234,169.86	.....	.....
Revenues:				
28. Freight	$936,578,408	$776,429,998	$3,992	$3,316
29. Passenger	267,167,702	255,769,640	1,139	1,092
30. Mail	*77,780,922	12,813,863	331	55
31. Express	37,092,468	22,324,351	158	116
32. All other transportation	33,576,301	27,105,381	143	116
33. Incidental	32,966,718	31,002,924	140	132
34. Joint facility—Cr.	1,793,270	1,651,593	8	7
35. Joint facility—Dr.	590,838	490,165	2	2
36. Railway operating revenues	1,386,364,951	1,126,607,585	5,909	4,811
Expenses:				
37. Maint. of way and structures	190,249,745	172,307,777	811	736
38. Maint. of equipment	353,277,930	286,230,056	1,506	1,222
39. Traffic	14,944,340	10,754,245	64	46
40. Transportation	645,128,058	524,454,371	2,750	2,240
41. Miscellaneous operations	13,297,747	10,610,573	56	45
42. General	34,771,519	30,759,466	148	131
43. Transon. for investment—Cr.	904,750	1,546,050	4	6
44. Railway operating expenses	1,250,764,589	1,033,570,438	5,331	4,414
45. Net rev. from ry. operations	135.600,362	93,037,147	578	397
46. Railway tax accruals	56,330,735	45,716,106	240	195
47. Uncollectible railway rev.	295,290	180,326	1	1
48. Railway operating income	78,974,337	47,140,715	337	201
49. Equipment rents (Dr. Bal.)	6,986,247	4,503,268	30	19
50. Joint facility rent (Dr. Bal.)	4,852,700	3,712,906	21	16
51. Net of items 48, 49 and 50	67,135,390	38,924,541	286	166
52. Ratio of operating expenses to operating revenues, per cent	90.22	91.74	...	...

(D)—Debit item.
§—Credit item.
*—Includes approximately $50,000,000 back railway mail pay.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	141	$183,493	$67,405	$271,885	$43,268	$45,927	$5,285	$90,962	$10,106	$198,783	73.11	$73,102	$14,251	$58,848	$58,255
Ann Arbor	301	342,835	54,160	426,582	74,173	83,210	5,911	202,637	13,310	379,333	88.92	47,251	17,500	29,746	—1,188
Arizona Eastern	377	263,513	52,722	340,052	70,617	49,234	2,651	96,683	20,238	241,702	71.07	98,350	25,676	72,665	38,030
Atchison, Topeka & Santa Fe	8,723	9,567,229	4,137,457	15,214,482	2,715,320	3,959,129	181,982	5,892,615	331,090	13,075,523	85.94	2,138,959	907,883	1,230,523	—1,391,505
Atlanta & West Point	93	107,289	95,166	228,411	29,334	45,487	5,029	82,631	9,733	176,954	77.47	51,458	8,928	42,530	—14,765
Atlanta Birmingham & Atlantic	639	339,510	79,473	457,745	119,888	134,390	19,714	253,305	27,827	555,186	121.28	—97,441	16,262	—113,741	—88,015
Atlanta City	177	140,460	229,022	385,294	51,913	53,538	1,875	173,833	475	281,738	73.12	103,556	14,520	89,033	—153,351
Atlantic Coast Line	4,890	3,683,827	1,425,135	5,739,062	973,102	1,188,538	70,914	2,889,370	132,045	5,287,356	92.12	452,016	300,000	152,016	102,211
Atlantic Coast Line	166	132,605	37,606	232,062	72,132	45,874	1,747	115,759	8,675	294,013	126.69	—61,950	12,123	—74,073	1,341,911
Atlantic & St. Lawrence	5,153	14,482,991	2,472,768	18,263,119	2,790,162	4,765,182	190,313	7,933,536	468,743	16,275,964	89.11	1,987,155	387,798	1,597,657	42,228
Atlantic & Ohio	87	79,606	30,735	118,781	9,441	82,494	1,151	76,818	3,367	173,271	145.87	—54,490	3,700	—58,190	98,742
Baltimore & Atlantic	658	475,859	78,850	581,914	114,840	107,719	4,512	193,070	19,146	449,645	77.27	132,269	26,996	105,273	47,272
Baltimore & Ohio	118	144,639	32,665	252,540	31,035	32,924	3,118	77,947	5,887	150,878	89.55	34,572	2,850	31,722	—10,660
Baltimore & Ohio	225	.....	.....	787,541	180,529	318,470	21,674	287,007	5,677	226,157	107.86	34,382	2,434	—9,050	—630,564
Bangor & Aroostook	31	724,973	36,130	59,390	5,129	7,944	854	34,648	3,316	51,892	87.37	—21,897	35,000	—56,897	135,199
Beaumont, Sour Lake & Western	225	.....	.....	169,030	31,617	35,839	1,405	33,829	4,990	107,824	63.78	61,206	13,284	47,922	17,490
Belt Ry. Co. of Chicago	31	43,375	1,405	928,685	1,420,422	47,172	2,382	3,460,776	226,947	6,115,866	89.67	703,990	7,408	—67,049	—239,244
Belt Ry. & Lake Erie	36	165,835	1,739,873	6,819,856	14,976	55,678	178	4,414	8,183	82,272	160.67	—31,067	3,200	—98,468	—98,468
Bessemer & Southern	2,304	4,364,333	.....	7,206	94,315	82,740	703,174	257,474	43,873	1,610,666	114.73	—33,060	35,000	—176,588	—90,993
Birmingham & Atlantic	9	46,945	6,790	51,205	69,855	16,051	99,388	4,072	4,169	210,970	101.37	—35,722	18,225	—57,417	—30,380
Bingham & Garfield	296	214,064	.....	224,414	550,179	2,899	310,513	95,429	17,469	615,116	108.62	—48,823	265,166	—3,135	—639,934
Boston & Maine	1,384,476	144,778	1,588,769	295,534	43,749	3,119	1,934,608	19,082	97,487	3,444,280	97.49	—40,001	17,400	—57,417	—15,461
Boston & Maine, District Terminal	589	29,079	175,248	60,862	106,593	32,789	422,933	8,565	678,462	106.26	97.18	—8,490	11,625	—3,135	—165,918
Boston & Maine, R. R. Corp	233	17,011	566,293	172,572	958,459	7,201	293,402	131,788	97.18	1,392,723	60,000	1,162,912	—92,247	—92,247
Brooklyn Eastern District Terminal	301	516,818	3,532,857	91,569	134,952	165,283	5,347,033	92.87	156,751	100,000	—180,564	4,925
Buffalo & Susquehanna	686	2,468,467	750,893	638,460	62,137	5,741	65,821	2,043,516	104.04	—82,278	4,596	224,085	—326,662
Buffalo, Rochester & Pittsburgh	413	498,601	86,767	301,892	922,728	51,675	46,520	2,682,468	94.19	265,032	40,900	395,545	—5,910,796
Buffalo, Rochester & Pittsburgh (lines in Maine)	342	52,915	6,739,255	406,257	1,532,827	33,616	929,722	64,239	2,115,605	74.26	725,000	—3,479,801	—121,053
Canadian Pacific	2,520	30,735	930,085	2,200,367	595,860	19,376	909,733	3,511	87,548	1,120,673	91.20	1,363,867	—31,573	—240,735
Canadian Pacific (Lines in England	1,050	233,310	6,739,255	384,474	724,985	1,056	47,640	764,772	107.81	—2,113,451	48,676	—255,122	—1,783,549
Central New England	1,131	5,306,017	556,474	2,033,327	18,800	16,542	445,903	31,834	11,623,960	98.51	17,187	2,994	—1,525,649	85,095
Central R. R. Co. of N. J	62	1,483,474	403,253	92,948	119,845	147,010	16,555	5,582,847	330,268	19,179,984	215.18	—252,129	677,263	—1,525,649	—1,231,281
Central Vermont	1,420,324	10,615	2,682,027	2,814,546	257,371	12,854,793	715,951	1,143,689	30,053	471,012	—848,386	17,833	83,054	—800,275	68,441
Charleston & Western Carolina	68,893	71,168	1,929,804	8,166,850	25,277	526,835	12,229	107.68	100,888	547,100	165,693	—9,439
Chesapeake & Alton	886,672	2,767,763	12,744,632	6,689,510	382,584	134	307,305	394,936	11,880,976	78.30	—151,435	137,100	—24,428
Chicago & Illinois	269	8,647,761	27,066,536	162,109	84,686	364,121	102.46	303,927	19,500
Chicago & East. Grand Trunk Junct.	8,405	16,045,128	7,413,936	1,160,873	66,658	118,996	5,572,079	12,391	10,454,997	86.89	—4,927	13,539	—44,687
Chicago, Det. & Can. Grand Trunk Junct.	6,069	731,286	296,525	218,883	2,620,745	3,082,251	9,204	202,973	246,092	2,009,851	101.32	—31,149	10,465	—41,920
Chicago & Erie	654	.....	.....	1,032,590	76,603	61,522	130,735	4,598,920	71,420	376,998	109.78	—31,451	234,510	—328,995	—1,379,028
Chicago & North Western	12	.....	2,389,290	11,465,008	2,376,803	3,032,086	25,382	1,042,241	142,893	10,763	111.67	—93,924	59,791	—284,995	—328,914
Chicago & Great Western	10,629	7,275,590	316,164	102,707	10,203,562	436,486	3,377	146,445	19,436	349,426	101.48	—225,169	5,000	—14,073
Chicago, Indianapolis & Louisville	463	6,921,126	2,639,815	2,313,018	421,698	139,014	9,282	99,032	5,886	300,649	120.52	—7,516	—307,391	—305,254
Chicago Junction	7,648	1,519,025	611,619	372,071	79,706	116,121	3,502	2,674,024	154,902	6,412,143	91.72	—225,891	81,500	—50,896	—1,086,502	—1,320,720
Chicago, Milwaukee & Gulf	1,749	338,663	23,413	57,352	88,264	79,259	41,491	1,322,501	83,283	107.96	389,583	630,170	216,206
Chicago, Rock Island & Pacific	374	.....	.....	318,271	103,965	2,029,069	9,387	444,075	42,069	3,062,530	93.97	338,693	136,000	23,517	—34,441
Chicago, Rock Island & Omaha	321	235,484	34,934	269,198	1,413,908	484,410	21,611	1,540,695	136,737	5,287,404	74.05	766,226	9,000	—36,641	—14,967
Chicago, St. Paul, Minn. & South Eastern	245	242,774	17,246	6,318,219	334,933	26,795	1,540,695	140,134	5,287,404	107.43	—14,517	37,970	—58,868	—187,599
Chicago, Terre Haute & Western	2,408	4,114,677	1,574,993	1,097,332	15,211	942,586	78,628	2,704,768	78,134	2,187,002	99.14	1,329	3,088	—7,311	—112,388
Cincinnati, Indianapolis & St. Louis	1,099	798,580	217,264	1,018	90,799	390,226	36,835	908,722	6,498	209,767	153,798	119.38	—55,780	9,192	703,655	61,611	—550,844
Cincinnati Northern	21,800	2,836,639	931,270	1,318,541	665,409	780	106,924	9,870	99.52	1,881	67,600	1,086,502	—1,320,720
Cincinnati, Chicago & St. Louis	43	209,841	5,626,097	445,447	41,570	2,345	68,755	343,500	771,409	105,904	46,177	34,444	—305,254
Cleveland, Cincin., Chicago & St. Louis	858	2,447,198	1,084,264	2,953,228	53,995	36,666	199,543	12,281	397,412	41.92	1,192,406	34,000	—5,638
Colorado & Southern	956	3,747,016	556,874	195,250	36,363	4,457	183,901	15,386	556,893	40.24	80,204	—12,059	—197,183
Colorado, & Wyoming	2,585	2,184,187	35,691	34,710	155,128	63,345	5,794	282,515	18,711	802,773	84.32	10,735	139,320	—1,688
Delaware & Hudson	148,939	63,877	92,322	741	370,736	26,846	9,707	431,518	—1,322	100,415	280,921	—1,532,958
Delaware, Lackawanna & Western	107,848	47,005	287,720	100,008	134,761	2,721	210,800	100.71	240,069	49,259	—1,018,909	157,874
Denver & Rio Grande	376	210,262	11,960	399,293	149,415	153,810	5,121	9,422	76.51	330,503	249,016	286,752	1,157
Denver & Salt Lake	195	366,350	22,719	1,328,243	247,532	79,919	50,071	781,901	81.32	—769,275	39,583	40,717	—14,487
Denver & Mackinac	454	106	52,800	1,995,179	119,982	3,516	91,070	1,439,647	110.26	326,338	5,075	—5,922	—36,185
Detroit & Milwaukee	298	1,216,788	100,085	511,722	44,206	17,629	315,690	36,946	8,310,596	70.72	45,792	5,000	—29,100	—507,455
Detroit, Grand Haven & Ironton	407	1,793,788	183,681	178,428	209,748	7,850	3,981,671	247,275	788,388	63.94	909	3,785	195,986	—22,661
Detroit, Toledo & Ironton	614	365,658	23,824	1,021,970	203,801	464,664	101,722	3,993,011	432,011	11,875	81,212	160.64	—25,279	74,388	35,266	—392,057
Detroit & Toledo Range	178	155,838	208,627	1,770,150	1,308,439	2,592,253	8,469	41,331	7,218	142,328	118.73	—118,455	5,950	—110,657
Duluth & Iron Range	1,027	750,438	12	7,541,320	141,698	153,214	381	55,148	62,163	160,177	105.91	41,218	51,084	—422,899
Duluth, Missabe & Northern	833	1,550,783	1,137,079	1,114,726	12,576	15,050	4,301	80,835	2,122,409	92.27	—59,534	288,277	—13,526	35,055
Duluth, South Shore & Atlantic	1,989	5,622,353	246,699	127,003	34,602	1,579	759,948	18,560	491,465	105.76	1,125,359	836,252	6,824	18,526	—104,187
Duluth, Winnipeg & Pacific	764	718,220	75,068	141,419	39,764	43,214	27,684	33,632	234,618	41,474	1,092,237	88.39	6,211	11,021	—149,181	—36,594
El Paso & South Western	88	45,679	29,150	134,898	759,584	485,000	11,231	544,135	8,570,443	106.18	29,619	87,016	—36,594
Elgin, Joliet & Eastern	253	49,652	58,602	2,003,953	64,662	112,194	15,174	3,634,791	213,281	88.71	—61,270	13,743	—32,989
Erie	235	65,603	431,364	532,603	156,546	328,295	109,151	3,066	232,772	103.28	—10,650	63,097
Erie, East Coast	1,384	1,422,131	139,005	1,032,704	2,747,199	1,728,822	1,029	37,689	1,942,999	103.40	30,109
Florida, Johnstown & Gloversville	328	342,367	221,795	2,747,199	19,331	3,778	108,019	54,221	323,663	96.98
Fonda, Johnstown & Western	350	731,151	1,429,058	9,695,801	45,504	49,116	851,725	16,493	970,573
Fort Smith & Western	8,175	7,179,605	11,642	100,408	58,326	484,074	26,862	150,158
Fort Worth & Rio Grande	252	79,011	50,243	262,390	1,881,229	526,119	9,862	33,212
Fort Worth & Harrisburg & San Antonio	307	194,844	486,672	57,132	313,012	81,389	65,769	6,404
Galveston, Western	1,907	1,243,213	541,161	1,000,681	159,311	367,259	404,399
Georgia	470	829,906	102,920
Grand Trunk Western	350
Great Northern
Green Bay & Western
Gulf & Ship Island
Gulf, Colorado & Santa Fe
Gulf, Mobile & Northern
Gulf, Mobile & Ohio
Hocking Valley

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Houston & Texas Central	885	$599,881	$238,984	$905,428	$266,038	$183,333	$17,339	$369,493	$25,487	$861,532	95.15	$43,895	$47,433	—$6,107	—$83,193
Houston, East & West Texas	190	187,939	52,382	253,276	137,606	31,667	2,367	104,146	5,381	281,167	111.01	—27,890	9,408	—37,558	—59,762
Illinois Central	4,799	7,696,303	2,117,412	10,713,131	2,001,680	3,070,198	89,750	5,038,210	231,902	10,527,729	98.26	185,402	658,585	—473,319	—1,664,723
Illinois Terminal	24	80,847	.....	85,414	4,037	8,919	593	14,737	4,818	33,102	38.75	52,311	1,117	51,195	19,017
Indiana Harbor Belt	120	.....	.....	587,866	207,688	93,604	2,296	383,766	18,533	705,887	120.07	—118,020	10,747	—128,768	—56,727
International & Great Northern	1,159	930,165	281,762	1,308,792	262,974	333,687	21,950	828,682	48,315	1,487,059	113.61	—178,266	32,500	—211,110	.....
Kanawha & Michigan	176	401,811	53,786	470,300	98,229	206,926	2,747	165,770	13,065	486,732	103.48	—16,432	25,000	—41,434	—124,867
Kansas City, Mexico & Orient	272	91,168	17,270	114,536	52,160	38,630	2,719	65,196	18,847	167,552	146.28	—53,017	7,700	—60,717	—15,067
Kansas City, Mex. & Orient of Tex	465	93,194	20,138	120,553	75,024	40,629	2,954	84,764	7,816	211,188	175.18	—90,635	6,250	—96,885	—48,554
Kansas City Southern	779	1,244,339	234,704	1,574,483	258,268	294,423	32,662	582,467	58,254	1,225,575	77.83	348,908	71,969	276,933	131,321
Lake Erie & Western	741	743,254	61,276	848,592	169,217	254,675	14,410	361,545	25,324	824,108	97.11	24,484	35,000	—9,154	—54,133
Lake Superior & Ishpeming	34	196,529	148	221,098	14,331	16,355	194	37,835	2,837	71,553	323.62	149,545	4,953	144,592	100,991
Lake Terminal	12	.....	160	109,626	20,451	33,530	.....	72,439	61	126,481	115.37	—16,855	5,902	—22,757	3,638
Lehigh & Hudson River	96	235,355	3,647	276,137	29,542	38,800	1,616	113,679	6,252	189,890	68.76	86,247	8,600	77,647	31,131
Lehigh & New England	229	432,303	1,812	447,339	57,036	73,642	2,912	131,149	13,229	227,930	50.95	169,409	14,803	154,606	51,072
Lehigh Valley	1,435	4,174,085	604,178	5,203,205	943,455	1,584,071	73,885	3,567,764	161,404	6,355,452	122.14	—1,152,246	206,000	—1,358,353	—1,552,680
Long Island	398	512,375	1,334,422	2,033,322	315,906	418,966	14,005	1,070,413	54,716	1,888,609	92.88	144,713	101,096	43,238	—493,107
Los Angeles & Salt Lake	1,168	1,149,660	398,450	1,687,127	256,140	339,483	29,099	585,158	38,887	1,297,854	76.92	389,273	76,222	313,048	185,810
Louisiana & Ark	302	252,744	48,962	313,988	77,308	42,994	4,459	102,069	8,050	234,880	74.81	79,107	18,342	60,759	72,762
Louisiana Ry. & Nav. Co	343	237,850	44,048	304,914	76,032	55,147	6,516	157,827	13,233	308,755	101.24	—3,840	14,000	—17,840	—173
Louisiana Western	207	278,359	100,863	408,007	100,911	76,667	7,963	109,378	15,409	312,975	76.71	95,033	20,320	74,628	—17,851
Louisville & Nashville	5,040	7,028,032	2,017,958	9,621,758	1,608,078	2,438,702	156,204	4,379,631	207,719	8,882,063	92.31	739,695	302,611	436,983	—242,771
Louisville, Henderson & St. Louis	199	161,580	61,620	237,505	76,947	29,242	5,046	86,602	8,617	206,453	86.92	31,052	7,215	23,806	—35,182
Maine Central	1,216	1,174,410	388,324	1,686,684	291,667	375,147	11,612	2,513	43,047	1,607,164	95.28	79,520	95,742	—16,227	54,247
Maryland, Delaware & Virginia	82	70,672	28,894	105,429	10,151	41,568	8,540	78,059	2,106	132,424	125.60	—26,995	2,000	—28,995	14,809
Michigan Central	1,862	3,525,762	1,969,043	6,199,723	1,237,211	1,665,645	77,075	2,642,796	123,512	5,851,159	94.37	348,563	246,500	100,940	—1,051,932
Minneapolis & St. Louis	1,646	974,126	196,216	1,247,138	315,036	350,263	19,316	620,139	38,523	1,343,391	107.72	—96,253	56,546	—153,079	—186,328
Minn., St. Paul & Sault Ste. Marie	4,243	2,711,526	629,529	3,676,015	738,504	624,215	45,930	1,493,200	86,844	3,009,758	81.87	666,256	275,012	391,230	135,451
Minneapolis & International	194	60,297	27,618	95,249	55,808	14,856	450	42,106	3,475	116,696	122.51	—21,448	6,042	—27,490	—11,712
Mississippi Central	164	52,301	20,949	78,113	15,585	26,504	2,062	34,952	6,711	85,813	109.85	—7,700	5,000	—12,700	1,409
Missouri & North Arkansas	364	91,366	39,934	141,024	66,996	33,634	3,027	63,979	6,483	174,119	123.46	—33,096	5,893	—38,988	22,322
Missouri, Kansas & Texas	1,715	1,997,961	689,745	2,921,105	576,657	803,804	42,073	1,034,743	96,125	2,570,451	87.99	350,654	94,942	255,214	12,974
Missouri, Kansas & Texas of Texas	1,739	1,117,803	749,978	2,043,521	536,642	365,878	30,509	1,113,550	83,502	2,150,296	105.22	—106,769	59,603	—166,655	—196,434
Kansas, Oklahoma & Gulf	329	159,421	23,883	193,042	41,965	33,941	2,694	93,148	9,090	180,988	93.75	12,055	10,500	1,555	96,412
Missouri Pacific	7,299	6,268,101	1,663,439	8,633,771	1,983,192	1,999,381	153,913	3,666,582	243,451	8,087,961	93.67	545,810	238,070	307,121	—307,338
Mobile & Ohio	1,165	1,124,059	189,318	1,410,921	270,616	452,329	29,422	650,739	45,706	1,449,767	102.75	—38,846	59,652	—98,498	—3,362
Monongahela	108	216,713	27,877	250,686	148,802	36,875	452	92,964	6,359	285,451	113.86	—34,765	6,293	—41,058	—93,971
Monongahela Connecting	7	.....	.....	273,420	31,235	36,255	561	128,291	6,628	202,972	74.23	70,448	3,003	67,444	89,173
Montour	56	103,784	1,237	108,657	37,122	52,768	1,128	38,249	6,878	137,963	126.97	—29,307	2,431	—31,737	—13,381
Morgan's La. & Tex. R.R. & S.S. Co	400	577,815	171,956	807,663	255,030	158,333	12,137	276,063	26,636	730,934	90.49	76,728	42,938	32,860	—50,010
Nashville, Chattanooga & St. Louis	1,247	1,509,236	442,083	2,072,974	348,393	447,858	46,659	880,192	56,655	1,783,433	86.03	289,542	42,500	247,020	207,914
Nevada Northern	165	146,933	9,853	163,438	25,592	22,723	797	41,228	5,646	96,143	58.82	67,295	8,267	59,028	25,639
New Jersey & New York	47	10,254	88,284	103,629	11,937	18,173	855	61,998	2,690	95,654	93.30	7,975	1,927	6,048	—4,721
New Orleans & Great Northern	284	143,937	50,916	203,871	47,782	39,800	4,266	84,639	9,547	186,587	91.52	17,284	12,117	5,167	27,191
New Orleans, Texas & Mex	191	151,409	41,049	199,230	57,816	52,940	4,694	75,707	9,054	199,972	100.37	—741	12,167	—12,905	—39,348
New York Central	6,069	16,045,128	7,413,936	27,066,533	6,689,510	8,166,850	257,371	12,854,793	715,951	29,179,984	107.80	—2,113,452	1,363,867	—3,479,801	—5,910,796
New York, Chi. & St. Louis	574	1,679,328	98,764	1,850,564	276,693	311,266	39,483	700,425	60,719	1,394,169	75.33	456,395	25,000	431,395	71,111
New York, New Haven & Hartford	1,965	4,551,805	4,150,437	10,000,392	1,426,941	2,187,563	54,274	4,989,738	334,788	9,181,648	91.81	818,744	339,000	478,712	—322,143
New York, Ontario & Western	569	650,406	204,871	1,030,376	178,951	242,705	10,427	461,943	26,487	920,513	89.34	109,863	29,100	80,763	—98,246
New York, Susquehanna & Western	135	312,957	61,088	44,781	33,825	67,660	2,256	246,378	8,273	358,386	86.40	56,395	18,674	37,718	10,083
Newburgh & South Shore	7	.....	.....	119,869	12,580	31,783	.....	80,918	4,459	129,739	108.23	—9,870	7,759	—17,629	—40,460
Norfolk & Western	2,199	5,343,366	789,914	6,423,483	1,057,792	2,001,773	53,105	2,497,375	143,823	5,777,480	89.94	646,003	425,000	220,724	—435,138
Norfolk Southern	905	405,722	155,261	600,994	147,532	116,475	12,590	310,125	32,719	619,623	103.10	—18,629	16,666	—35,389	—38,042
Northern Pacific	...	5,674,521	1,566,089	7,981,880	3,028,649	1,533,094	80,070	3,186,116	231,641	8,218,088	102.95	—236,208	739,131	—976,347	—1,123,735
Northwestern Pacific	538	300,083	258,181	637,438	87,704	75,065	5,775	256,329	16,029	443,432	69.56	194,006	25,647	168,359	34,146
Oregon Short Line	2,353	2,648,122	596,845	3,514,123	552,186	647,457	30,630	964,005	126,345	2,388,147	67.95	1,125,976	275,703	850,273	165,742
Oregon, Washington R.R. & Navigation	2,223	1,680,946	586,914	2,500,318	567,841	467,087	39,502	1,041,775	126,917	2,273,475	90.92	226,842	248,252	—21,426	—309,830
Panhandle & Santa Fe	773	499,136	139,993	678,472	178,819	236,554	3,855	246,211	1,616,325	681,763	100.49	—3,291	20,435	—23,726	56,115
Peoria & Pekin Union	19	18,604	3,340	99,800	21,173	29,144	9	65,885	4,239	120,450	120.69	—20,650	9,500	—30,150	14,873
Pere Marquette	2,230	2,324,529	520,929	3,161,077	482,917	638,855	34,771	1,296,267	121,230	2,582,702	81.70	578,376	79,960	498,414	—85,367
Perkiomen	41	79,950	11,455	95,121	6,635	4,778	10	39,653	124	51,220	53.84	43,901	3,275	40,625	13,171
Philadelphia, Beth. & New England	10	.....	.....	138,517	24,140	18,650	496	77,107	1,506	121,900	88.00	16,617	1,030	15,587	22,897
Philadelphia & Reading	1,126	6,083,423	783,925	7,294,061	789,282	1,113,745	50,119	3,129,035	145,704	5,249,494	71.97	2,044,567	209,583	1,834,969	1,190,981
Pittsburgh & Lake Erie	224	385,718	248,447	754,893	536,696	1,036,017	14,977	558,700	57,035	2,205,258	292.12	—1,450,364	151,571	—1,602,027	—1,428,394
Pittsburgh & Shawmut	103	129,061	5,596	135,487	24,864	29,356	1,298	48,711	5,370	109,599	80.89	25,888	149	25,739	38,896
Pittsburgh & W. Va	63	156,850	9,557	184,153	64,664	38,377	1,963	63,089	13,146	194,333	105.52	—10,179	14,939	—25,108	55,534
Pittsburgh, Shawmut & Nor	209	94,115	5,572	103,502	34,140	61,491	1,017	49,861	5,593	152,110	146.96	—48,607	1,885	—50,492	89
Fort Reading	21	112,901	.....	134,589	17,275	3,711	18	53,124	—4,149	69,979	51.99	64,610	12,007	52,603	—59,049
Richmond, Fred. & Potomac	118	492,415	298,730	925,816	87,999	156,998	6,480	385,370	29,284	672,988	73.77	252,828	31,050	221,664	—285,897
Rutland	415	261,934	112,464	459,644	140,696	176,262	4,051	216,189	13,598	552,659	120.24	—93,015	18,169	—111,188	—114,991
St. Joseph & Grand Island	258	195,733	33,969	249,922	101,023	33,750	1,938	129,721	12,335	282,581	113.06	—32,659	11,881	—44,539	—35,583

Traffic News

The Wabash inaugurated a new daily train on July 11, leaving Chicago at 10 a. m. and arriving at Detroit at 5:35 p. m. It has also restored its Pullman service to New York.

Charles A. Lahey, who recently resigned as general freight agent of the Chicago, Milwaukee & St. Paul, to become a member of the Western Trunk Lines Rate Committee, has resigned the latter position to become traffic manager of the Quaker Oats Company, effective July 15.

The New York Public Service Commission, First District, has suspended until November 29 new tariffs filed by the Long Island on July 2, calling for increases in passenger fares on its lines out of New York, amounting in many cases to 10 per cent over existing rates. Hearings have been set to begin August 2.

Representatives of the Atchison, Topeka & Santa Fe appeared before the California Railroad Commission on July 1 to protest against the further invasion of the freight hauling business between Los Angeles, Cal., and San Francisco by motor trucks. The United Motor Freight & Express Co. is seeking to establish a San Francisco-Los Angeles long haul freight truck line. The hearing has not been completed.

An embargo on all shipments of lumber billed to Cincinnati, O., and to points in the Cincinnati switching district was placed in effect on July 1, by the local Commission on Car Service Committee. The embargo, it is explained, will not blockade the shipment of lumber into or through Cincinnati, as permits will be issued authorizing the movement of the commodity to points that are not under blockade beyond Cincinnati.

The Traffic Club of Cleveland, Ohio, has elected the following officers: President, C. T. Stripp, traffic manager of the National Malleable Castings Company; first vice-president, M. R. Maxwell, general freight agent of the New York Central; second vice-president, H. N. Sibbal, traffic manager of the National Lamp Works of the General Electric Company; secretary, F. A. Gideon, special agent for the American Steel & Wire Company; and treasurer, M. J. Naughton, commercial agent of the Delaware, Lackawanna & Western.

In the three days' period from July 3 to 5, inclusive, the Pennsylvania Railroad carried to Atlantic City, Wildwood, Cape May and intermediate points 87,208 passengers, and hauled back from the same points 76,585 passengers. This makes a combined total of 163,793 persons, much exceeding the traffic in any corresponding period in the history of the South Jersey lines. In transporting these passengers 1,515 cars were operated to the seashore points, and 1,513 were operated back, making a combined round-trip movement of 3,028 cars.

The American Wholesale Lumber Association, Chicago, has appointed the following members on its traffic committee: A. L. Stone, chairman, Nicola-Stone & Myers, Cleveland, O.; C. E. Walden, Sabine-Tram Lumber Company, Beaumont, Tex.; M. G. Truman, Marsh & Truman, Chicago; Thomas E. Coale, Thomas E. Coale Lumber Company, Philadelphia, Pa., and J. G. McCormick, McCormick Lumber Company, Birmingham, Ala. The traffic committee has been organized to protect the industry, and in particular the wholesalers, but will also, in every way possible, assist in co-operating with the railroads and the government in meeting the present transportation emergency.

The Southern Pacific Lines have arranged for the issuance of export permits from the Southern Pacific office at Memphis, Tenn., direct to points in Japan and China for the export of cotton from the local territory. These permits will cover shipments moving through San Francisco, Cal., Portland, Ore., Seattle, Wash., and other Pacific coast ports to the Orient. Heretofore it has been necessary to obtain such permits through the terminal lines at the port of exit, involving considerable delay to shippers. The permits will be issued to shippers immediately after space is contracted for.

Coal Production

A decrease of 3 per cent in bituminous coal production during the week ended July 3 is attributed to diminished output on Friday and Saturday, on the eve of the Fourth of July holiday, according to the weekly bulletin of the United States Geological Survey. The total production of soft coal, including lignite and coal coked at the mine, is estimated at 10,255,000 net tons, a decrease when compared with the preceding week, of 305,000 tons. The output was, however, larger than that of the week of June 19, before the service order granting complete priority for coal mines in the use of open-top cars went into effect.

Production during the first 158 working days of the last four years has been as follows:

1917	278,000,000	1919	218,099,000
1918	288,000,000	1920	262,272,000

The year 1920 is thus 15¾ million tons behind 1917, and 26¾ million tons behind 1918, but is over 44 million tons ahead of 1919.

The mine reports for the week ended June 26 show an improvement in car supply apparently attributable to the order effective June 21, directing priority in the use of open-top equipment for coal mines. Transportation disability remained the dominant factor limiting production; losses due to all other causes were at a minimum. Service Order No. 6, directing that coal mines be given priority in the use of open-top equipment for a period of 30 days beginning June 21, was in effect throughout the week of the 26th. The reports, therefore, measure the improvement in car supply effected. Partly or wholly as the result of the order the average working time over the country as a whole increased from 53.9 to 55.5 per cent of full time, and the average loss attributed to car shortage declined from 39.4 to 37.9 per cent. The improvement is said to be the more significant when it is remembered that it was accomplished in spite of further outbreaks of the switchmen's strike on carriers serving the Somerset, Cumberland-Piedmont and Fairmont fields and Section C of central Pennsylvania which, for a time at least, practically stopped eastbound shipments from those districts. Although the improvement was widespread it was by no means universal and in many districts the car supply grew even less satisfactory than before.

No material increase was shown in lake shipments during the third week of operation of the pool re-established by Service Order No. 5. Total lake shipments since the beginning of the season now amount to 4,130,000 tons, as compared with 8,561,000 tons in 1918, and 10,053,000 tons in 1919. With more than one-third of the season of navigation gone, the lake movement is thus nearly four and a half million tons behind 1918, and nearly six million tons behind 1919.

How the country has run down in its stock of soft coal is strikingly shown in a report issued by the Geological Survey, showing that while in ordinary times there is a supply of some 35,000,000 tons of coal in the hands of consumers in the early Spring months, the country's surplus throughout last Spring was almost entirely exhausted. On May 31, the Survey's figures show, there were stocks of bituminous coal at industrial plants, other than steel, of 3,389,066 tons throughout the country, representing an average of 3 3/7 weeks' supply. Public utility plants had on hand 1,372,880 tons, or a little over 3 weeks' supply. Coal gas plants had stocks of 222,805 tons, or enough to last 3 1/7 weeks. In some centers the shortage was much more acute than in others.

The Geological Survey's tabulation for manufacturing and public utility plants in individual states shows that on May 31 New York State had run down to a supply that would last 2 6/7 weeks, New Jersey 3 2/7 weeks, Pennsylvania 3 1/7 weeks, Delaware 3 2/7 weeks, West Virginia 3 3/7 weeks, New Hampshire 2 6/7 weeks, Ohio 2 weeks, Illinois 2 weeks, Virginia 1 2/7 weeks, Kentucky 2 weeks, Tennessee 2 1/7 weeks, Arkansas 2 weeks, Texas 1 4/7 weeks, Colorado 2 weeks. In Massachusetts there was a supply of 5 1/7 weeks, Connecticut 4 1/7 weeks, Rhode Island 6 1/7 weeks, North Carolina 4 6/7 weeks, South Carolina 7 4/7 weeks.

Commission and Court News

Interstate Commerce Commission

The commission has suspended from July 5 to November 2 proposed cancellation of distance rates on grain and grain products between Missouri points on the one hand and Iowa points on the other hand as published by the Chicago, Burlington & Quincy.

The Interstate Commerce Commission has suspended from July 1 to October 29, tariffs of the Belt Railway of Chicago, the Chicago & Western Indiana and the Indiana Harbor Belt, naming increased switching charges at points within the Chicago switching district.

The Interstate Commerce Commission has suspended from July 15 to November 12 proposed increased rates on potatoes, carloads, applicable from certain points in Iowa, Minnesota, Michigan and Wisconsin to certain points in Arkansas, Illinois, Iowa, Missouri, Wisconsin and Kentucky, as published in a tariff issued by E. B. Boyd, agent.

The Interstate Commerce Commission has further suspended from August 2 until September 1 the operation of the Hudson & Manhattan Railroad Company tariff increasing the local fares between points on its line in the City of New York, Borough of Manhattan, and Jersey City and Hoboken, New Jersey, the operation of which was suspended from April 4 to August 2 by an order previously entered.

The Interstate Commerce Commission has declined to modify its order giving shipments of coal to tidewater for coastwise shipment to points in the United States priority over the movement of coal for import. A modification of the order was requested by Secretary of Commerce Alexander, who said that the virtual embargo on coal exports would have a disastrous effect upon American foreign trade and upon the American shipping industry.

The Commission has rendered a decision on the complaint of the Wholesale Coal Trade Association of New York against the director general of railroads, holding that demurrage charges assessed on tidewater coal held at Baltimore, Philadelphia and certain points in the vicinity of New York, from November 11, 1918, to March 2, 1919, were not unreasonable. The demurrage charges assessed between March 3, 1919, and March 31 were unreasonable to the extent that they exceeded the charges based upon five days' free time and a demurrage charge of $2 per car per day, but that the charges and free time rule in effect since March 31, 1919, have been and are reasonable. The decision holds that the difference in treatment accorded the complainants and the lake port shippers does not constitute an undue discrimination and that the record does not justify a departure from the general rule with respect to denying relief from demurrage charges which accrued during strikes.

Application for Southern Pacific Water Service Denied

The Interstate Commerce Commission has denied the application of the Southern Pacific Company, under the provisions of Section 5 of the act to regulate commerce as amended by the Panama Canal Act, for a modification of the order heretofore entered by the commission to permit operation of its Atlantic steamship lines in either regular or irregular service between New York and Port Arthur, Sabine Pass, Texas City, Freeport, Houston, Beaumont and Orange, Texas, and between Portland, Me., Boston, Fall River and New Bedford, Mass., Providence, R. I., Philadelphia, Pa., and Baltimore, Md., on the one hand, and New Orleans, La., and Galveston, Tex., and other Gulf ports on the other hand. The commission holds that it is possible for the Southern Pacific Company to compete with the proposed boat lines and that such service is not in the interest of the public and of advantage to the convenience and commerce of the people and will exclude or prevent competition on the routes by water.

Foreign Railway News

Railway Rates in Belgium Increased

LONDON.

On July 1 the passenger fares on Belgian railways will be increased by 10 per cent and freight rates by 50 per cent.

Central Argentine Railway Extensions

LONDON.

The Central Argentine Railway has decided to devote a sum of 40,000,000 gold pesos (approximately $36,800,000) to the extension of its system.

Electrification of Santander-Bilbao Railway

At the general meeting of the shareholders of the Santander-Bilbao Railway, held in Madrid, recently, according to the Railway Gazette, London, it was decided to carry out the electrification of the line, which has a length of about 74 miles.

Reconstruction of French Railways

Repair and renewal of lines, bridges and tunnels on the Northern Railway of France has now been almost entirely completed, says a note in the Railway Gazette, London, and normal express services will be practicable on the Paris-Lille-Tourcoing, Paris-Saint Quentin-Erquelines and Paris-Laon-Hirson lines. Out of over 600 bridges, 475 are now permanently restored and 80 others are on the point of completion. The three tunnels of Vauxaillon, La Férée and Guise, which were blown up, are repaired. Of 113 destroyed road bridges, 50 are restored. At the great Hellemmes workshops, where only walls remained, a temporary restoration was effected which permitted of the repair of 147 engines during last year. All restrictions in regard to goods traffic on the Nord line have been withdrawn.

Improvements on the Manila Railroad

The board of directors of the Manila Railroad Company, which operates 647 miles of track in the Philippine Islands, nearly all on the island of Luzon, has authorized the expenditure of $2,500,000 for new equipment and betterments.

The directors approved requisitions for 30 new locomotives, 100 thirty-ton freight cars and 25 additional passenger coaches. Bids for furnishing this equipment will be opened soon in New York. E. J. Westerhouse, general manager of the railroad, is now on his way to the United States, bringing with him the necessary documents to effect the dissolution of the New Jersey corporation, which has operated the railroad. When this dissolution has been concluded under an act of the Philippine Legislature, the road will become a Philippine corporation.

Proposed New Railways from Argentina to the Pacific

LONDON.

The Times Trade Supplement states that in the past the construction of a railway between Salta on the Argentine State railway system and Antofagasta, Chile, on the Pacific has been discussed and considered. Although the project was looked on favorably by the Argentine Government, the Chilean Congress refused to grant the concession chiefly owing to traditional dislike on the part of Chile of any violation of that bulwark built for them by nature—the Andes. However, this feeling is disappearing and on all sides favorable consideration is being given to the proposed construction.

The proposed route of the railway comprises a distance of about 650 miles from Antofagasta to Salta and crosses the Chilo-Argentine frontier approximately at half-way at a place called Huatiquina. The total estimated capital required is $40,000,000, of which $17,500,000 would be devoted to the Chilean section of the line. The project is that the Argentine and Chilean govern-

ments should respectively guarantee the interest on the capital expended on the construction of the part of the line traversing each country.

Electric Locomotives for the Swiss Federal Railways

The first of the 14 electric locomotives ordered by the Swiss Government in the latter part of 1918 for the Federal Railways (Guebe Valley and Berne-Schwarzenbourg lines) has just been delivered by the builders, the S. A. Brown, Boveri & Cie, Baden.

The new locomotive has successfully passed the tests it was subjected to before acceptance. The locomotive develops 1,000 horsepower at a speed of 40 kilometers (24.85 miles) per hour. The maximum speed attainable is 60 kilometers (37.28 miles) per hour. Single-phase, 15,000-volt power is supplied to the locomotives by an overhead system.

Of the 14 electric locomotives ordered, seven were to be made by the Swiss Machine & Locomotive Works at Winterthur, Switzerland, and seven by the S. A. Brown, Boveri & Cie, Baden, Switzerland.

Exports of Cars in May

The exports of freight cars in May totaled 1,884, valued at $3,789,237. The passenger car exports totaled 14, valued at $110,798, and the item parts of cars is given as $1,828,373. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

EXPORTS OF CARS FOR RAILWAYS IN MAY

Countries	Passenger		Freight and other		For other railways		Parts of cars.
	Number	Dollars	Number	Dollars	Number	Dollars	Dollars
Finland							96,150
France			833	2,005,111			168,592
Italy							90,310
Poland and Danzig			350	665,000			
Spain							869,118
Switzerland							130
England							12,745
Canada	2	4,000	31	48,655	154	15,253	114,496
Guatemala							38
Honduras			10	45,000			217
Nicaragua							500
Panama							782
Mexico			14	19,546	25	6,100	4,526
Newfoundland and Labrador			1	1,640			
Jamaica							500
Trinidad and Tobago					18	11,727	
Cuba	3	48,000	367	533,899	105	110,521	118,181
Dominican Republic			22	20,920	3	780	844
Argentina							25,500
Brazil			70	113,675			31,748
Chile			10	17,437			2,559
Colombia	9	58,798					22,972
Ecuador							846
Peru			8	4,344			63,928
Uruguay							305
China			58	86,914	165	41,374	48,657
Chosen							19,676
British India			10	21,160			
Japan							25,689
New Zealand							33,435
Philippine Islands							70,220
British West Africa							63
British South Africa			100	205,936	6	47,346	5,646
French Africa					50	15,000	
Total	14	110,798	1,884	3,789,237	526	248,101	1,828,373

Lamentable Condition of German Rolling Stock

LONDON.

The "Berliner Tageblatt" has received the following information from the Federal railroad Ministry regarding the present situation of the German railroad traffic and the present condition of the railroad repair shops.

During the past months the railroad traffic has shown a considerable improvement as compared with the preceding year. There are various reasons for this improvement. Conditions on the Prussian lines have become more consolidated, mainly on account of the severance of the Saar territory from the Federal railroad system. The former Prussian-Hessian State Railroad has now in its possession 23,000 locomotives, or 1,400 more than before the war. But of these 23,000 locomotives, only 13,000 are in working condition. Before the war 17,500 were in working condition.

In order to meet fully the demands of the traffic, about 1,000 to 1,500 more locomotives in working condition are necessary. About 1,400 locomotives had to be sidetracked because the repair shops could not keep them in condition.

During the last few weeks, 80 new locomotives were finished and delivered, 40 of which had been built by private concerns. Notwithstanding this addition the number of locomotives fit for service has not been increased by 80, but only by 30 to 40, as about this same number of locomotives had to be withdrawn elsewhere in the meantime. This shows that the repair shops are still unable to meet the demands made upon them to keep the rolling stock in good condition.

More building materials are now available, but there is still a scarcity that puts a curb on the building of new locomotives and on the repairing of the old ones. The delivery of coal has also improved somewhat.

Exports of Railway Track Material in May

Exports of rails in May totaled 58,497 tons, valued at $3,434,893; of spikes, 3,072,767 pounds, valued at $137,087, and of switches, frogs, splice bars, etc., valued at $582,278. The detailed figures by countries, compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce, are as follows:

EXPORTS OF RAILWAY TRACK MATERIAL IN MAY

Countries	Spikes, 529		Steel rails, 530		Switches, frogs, splice bars, etc. 531
	Pounds	Dollars	Tons	Dollars	Dollars
Belgium					25
Denmark			4,740	249,143	26,767
France			679	27,069	1,010
Italy					1,970
Netherlands					4,978
Portugal			8	403	17
Roumania					7,767
Spain			506	32,855	5,149
England			175	11,469	9,727
Canada	2,980	135	2,909	157,744	23,226
Costa Rica					2,083
Guatemala	20,000	1,230			600
Honduras	70,395	3,918	978	57,647	19,659
Nicaragua	50,000	2,207	34	1,725	478
Panama					112
Salvador					284
Mexico	67,201	3,949	335	19,156	36,072
Barbados					591
Jamaica	21,220	1,104			363
Trinidad and Tobago			879	50,339	3,940
Other British West Indies					990
Cuba	1,067,586	44,207	8,860	466,677	108,147
Dutch West Indies	200	21			
French West Indies	2,000	105			1,250
Haiti	200	38			
Dominican Republic	254,262	11,153	1,448	91,484	5,666
Argentina	14,400	792	324	21,303	643
Brazil	305,811	16,032	499	31,240	35,867
Chile	75,611	3,484	130	7,821	8,245
Colombia	600	48	1,004	51,231	1,247
Ecuador	17,000	870	176	9,764	164
Dutch Guiana					2,498
Paraguay			184	10,614	
Peru	70,950	4,470	2,164	158,902	18,497
Venezuela	6,000	231	55	3,054	510
China	4,600	199	214	13,970	6,748
British India	3,700	102	60	3,866	124
Straits Settlements			6	504	2,304
Dutch East Indies			3,226	168,730	6,740
Japan	877,486	34,206	20,879	1,324,487	151,972
Siam			29	1,761	
Philippine Islands	140,565	8,586	3,314	191,484	15,581
British South Africa			4,483	258,055	69,166
Portuguese Africa			199	12,396	1,101
Total	3,072,767	137,087	58,497	3,434,893	582,278

Increase of English Railwaymen's Rates

LONDON.

The Ministry of Transport has stated recently that the cabinet has had under consideration the report of the National Wages Board upon the claims relating to wages of railwaymen, referred from the Central Wages Board, and that in accepting the conclusions come to by the board the cabinet has been deeply impressed by certain remarks in the report.

In the report it is clearly stated that the present claims cannot be put forward on the ground of the increase which has taken place in the cost of living, but that the evidence given on behalf of the unions made it apparent that such claims have as their basis a desire to improve the pre-war status of railway workers, and that the present wages at present prices give a larger purchasing power than pre-war wages at pre-war prices.

The board concluded from the evidence submitted that large

increases in the charges to the users of railways are necessary, in order to meet the increased cost of labor, materials and stores, even apart from any concession in respect of the claims then before the board. It was also of the opinion that it would be an unwarrantable reflection upon the present management of the railways of England to suggest that such further economies are immediately practicable as would cover to any appreciable extent the additional costs with which the companies are faced and it was stated in the report, "That the board must also bear in mind that somewhere a point is reached at which an increase in rates will produce no additional revenue. That point can be determined only by experience, and there is accordingly some risk attaching to any substantial increase in rates that it will lead to such displacement or arrestment of traffic as will result in loss instead of gain."

The National Wages Board concedes that the settlement should not be disturbed for such period as will facilitate a return to that stability of industry and commerce which is so necessary to the well-being of the community, but the cabinet is of the opinion that this must be accepted with the qualification that should forthcoming increases of railway rates and charges consequent in large measure upon the increased cost of labor, not produce additional revenue, it would be impossible that the present level of wages could be maintained. In such circumstances the improved standard of remuneration of railwaymen, which the government desires if possible to maintain, can only be maintained by hearty co-operation of the workers with the management, enabling such substantial economies in working to be effected as will adjust any adverse balance.

The cabinet has also decided to extend to Ireland in principle the findings of the board, and to increase the wages on Irish railways by similar percentages to those given in Great Britain.

Exports of Locomotives in May

The exports of locomotives in May numbered 152, valued at $5,906,046. This is five less in point of numbers than were exported in April. From the standpoint of value the May figure represents the greatest export of locomotives for any month this year to date. The shipments to Belgium made up the largest single item.

The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF STEAM LOCOMOTIVES IN MAY

Countries	Number	
Belgium	62	$3,589,700
France	28	840,000
Canada	3	51,292
Mexico	6	60,550
Cuba	5	113,640
Brazil	9	179,810
Chile	2	36,330
Colombia	5	136,479
Ecuador	3	98,025
Peru	3	30,450
China	7	232,764
Chosen	4	118,900
Japan	7	54,420
Philippine Islands	2	5,186
British South Africa	6	358,500
Total	152	$5,906,046

Exports of Car Wheels and Axles in May

The exports of car wheels and axles in May totaled $756,027, as compared with $593,394 in April. The detailed figures by countries as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF CAR WHEELS AND AXLES IN MAY

Countries		Countries	
France	$208,872	Chile	$3,672
Italy	39,180	Colombia	4,170
Portugal	10	Ecuador	605
England	16,992	Paraguay	5,175
Canada	34,737	Peru	1,161
Guatemala	126	Uruguay	504
Honduras	890	Venezuela	2,190
Nicaragua	505	China	2,100
Panama	4,223	Kwantung	91,329
Mexico	19,522	Dutch East Indies	7,760
Jamaica	264	Japan	98,449
Trinidad and Tobago	2,372	Australia	170
Other British West Indies	28	New Zealand	7,981
Cuba	75,903	Philippine Islands	1,201
French West Indies	300	British South Africa	1,333
Haiti	127	French Africa	45,000
Dominican Republic	1,325	Portuguese Africa	56
Argentina	6,648		
Brazil	71,147	Total	$756,027

Equipment and Supplies

Locomotives

NORTHWESTERN PACIFIC.—See item under freight cars below.

THE NEW YORK, CHICAGO & ST. LOUIS is inquiring for 3, 8-wheel switching locomotives and 5 Mikado type locomotives.

GEORGE H. CAREY, 1 Broadway, New York, is inquiring for one 0-4-0 second-hand switching locomotive, with tender, for export to Canada.

COLOMBIAN GOVERNMENT.—The Baldwin Locomotive Works has completed a transaction with the government of Colombia whereby the company has established a credit of $2,000,000 in favor of the South American republic. The contract, arranged by the Under-Secretary of Railroads, has been approved by the Minister of Finance. It is understood that the credit is for ten years, and allows Colombia to draw upon it at any time. So far no orders for engines have been placed under the credit established. At a cost of $50,000 each the credit would cover purchase of 40 engines.

RUMANIAN GOVERNMENT.—The Baldwin Locomotive Works has received an order for spare parts for locomotives from Rumania. Terms of payment, it is understood, are cash against documents, the Rumanian government having established a credit in this country. This order is in addition to the order taken by President Samuel M. Vauclain while in Rumania covering engines and spare parts and to be paid by shipments of oil. The parts in the new order are understood to be for Pershing locomotives, which were turned over to the Rumanian government at the end of the war.

Freight Cars

THE NEW YORK, CHICAGO & ST. LOUIS is inquiring for 100 coal cars.

THE STANDARD OIL COMPANY is inquiring for from 500 to 1,000 tank cars.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 5 caboose cars.

THE VIRGINIA & CAROLINA SOUTHERN is inquiring for 25, 40-ton flat cars

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 10 caboose underframes.

THE JOINT PURCHASING COMMISSION OF INDIANA is inquiring for 25 to 50 gondola cars.

THE GRASSELLI CHEMICAL COMPANY, Cleveland, Ohio, is inquiring for from 75 to 100, 50-ton tank cars.

THE PRISCILLA COAL COMPANY has ordered 45, 55-ton hopper cars from the Pressed Steel Car Company.

THE NEW JERSEY ZINC COMPANY, New York, is inquiring for 45, 55-ton hopper cars and 5, 40-ton box cars.

THE ST. LOUIS-SAN FRANCISCO has ordered repairs on 1,500 box cars from the American Car & Foundry Company.

THE GULF COAST LINES are inquiring for 500, 40-ton box; 300, 50-ton gondolas, 150, 50-ton flat cars, and 50, 50-ton tank cars.

THE PICKANDS-MATHER COMPANY, Cleveland, Ohio, has ordered 412, 70-ton hopper cars from the Cambria Steel Company.

ROBERT HUDSON, LTD., London, England, is inquiring for 45 gondola cars and 45 box cars of 77,000 lb. capacity, for use on the Benguela Railway.

THE THOMAS F. CAREY COMPANY, 120 Liberty street, New York, is inquiring for second-hand equipment, as follows: 200, 30-ton

box cars; 200, 40-ton flat cars; 200, 40-ton gondolas, and 150, 50-ton steel hopper cars.

THE CHICAGO & NORTH WESTERN is inquiring for 500, 40-ton stock cars, and later will be in the market for a large number of additional freight cars.

GEORGE H. CAREY, 1 Broadway, New York, is inquiring for second-hand equipment, as follows: 16 flat cars of 25-ton capacity and 15 box cars of 30-ton capacity, to be 38 ft. long or over, for export to Mexico.

NORTHWESTERN PACIFIC.—The Railroad Commission of California authorized this company, June 17, to purchase equipment consisting of one tug, one car float, 60 logging flat cars, 50 stock cars, 50 steel gondolas, 10 cabooses, 10 steel baggage cars, 6 steel coaches, 12 vestibule wooden coaches, 12 wooden coaches for suburban service and 3 locomotives.

THE AMERICAN TRADING COMPANY, 25 Broad street, New York, is inquiring for the following equipment: 50 steel cane cars of 60,000 lb. capacity, with side unloader, wooden floors and three wooden compartments, to be 36 ft. or 37 ft. long and equipped with standard couplers and air brakes; 40 steel, 20-ton cane cars, with side discharge and two compartments, to have wooden floors and be 30 ft. long and equipped with air brakes; 40 steel flat cars of 60,000 lb. capacity, with wooden floors, to be equipped with stake pockets, air and hand brakes; 3 refrigerator cars, all for export.

Passenger Cars

NORTHWESTERN PACIFIC.—See item under freight cars above.

THE DELAWARE, LACKAWANNA & WESTERN is in the market for 10 milk cars.

THE ALABAMA & VICKSBURG has ordered 6 passenger coaches from the American Car & Foundry Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand combination mail and passenger coach, about 70 ft. long, mail compartment 30 ft. inside measurement.

Iron and Steel

THE ATCHISON, TOPEKA & SANTA FE is offering 2,000 tons of scrap iron.

SOPHUS BERENDSEN, 15 Broad street, New York, is inquiring for 3,000 tons of 60-lb. T-rail and accessories, for export.

THE CHICAGO & NORTH WESTERN has issued a list of scrap for sale aggregating 4,000 tons and including 500 tons of No. 1 steel rails.

THE OREGON WASHINGTON has placed a contract for a drawbridge across the St. Joe River, near Chatcolet, Idaho, with the American Bridge Company. The contract calls for 300 tons of structural steel.

GEORGE H. CAREY, 1 Broadway, New York, is inquiring for 400 tons of 20-lb. relaying rail, for export to China; also, for 100 tons of 60-lb. relaying rail, for export to Cuba, and for 1,200 tons of 50-lb. relaying rail.

Signaling

THE CANADIAN NATIONAL RAILWAYS have ordered from the Union Switch & Signal Company a 16 lever Saxby & Farmer interlocking machine with 13 working levers and 3 spare spaces and other attendant mechanical materials for Neepawa, Ont.

THE CANADIAN PACIFIC has placed an order with the Union Switch & Signal Company for a 48-lever Saxby & Farmer interlocking machine with 42 working levers and 6 spare spaces, together with the necessary materials for rebuilding and enlarging the mechanical interlocking plant at Hamilton Junction, Ont.

Supply Trade News

George R. Boyce was elected third vice-president of **A. M. Castle & Co.**, Chicago, at a recent meeting of the board of directors.

Jerome A. Moss has resigned from the firm of Joseph E. Nelson & Sons, contractors, Chicago, and will engage in general railway contracting, with offices at Chicago.

T. W. McManus, master mechanic for the Kellogg Switchboard & Supply Company, Chicago, has been elected vice-president and general manager of the **Security Tool Works,** Chicago.

J. I. Capps has been appointed purchasing agent of the **American Manganese Steel Company,** Chicago, with headquarters at Chicago Heights, Ill., succeeding **S. T. Peebles,** who is now in charge of sales. The appointment is effective July 1.

J. D. Roett, sales engineer for the Union Switch & Signal Company, Swissvale, Pa., with headquarters at Chicago, has resigned to enter the service of the **Standard Tank Car Company,** Sharon, Pa., in the same capacity and with the same headquarters.

George Wagstaff, sales manager for the Onondaga Steel Company, at Syracuse, N. Y., has been appointed district manager of sales in charge of the Chicago territory for the **Central Steel Company,** Massillon, Ohio, with offices in the Peoples Gas Building, Chicago.

The American Car & Foundry Company has recently purchased two additional pieces of real estate for its contemplated $2,000,000 plant extending from Blue Island avenue, along Paulina street to the Chicago River, at Chicago. The land, now occupied by the company, was formerly under lease.

Alfred Herbert, Ltd., machine tool makers and importers, Coventry, England, announce that **E. D. Mitchell,** for many years a member of its Coventry staff, and lately assistant manager of the New York branch, has been appointed manager at New York, to succeed **W. J. Fuller,** who has resigned from that position.

The **Falls Hollow Staybolt Company,** Cuyahoga Falls, Ohio, announces that the **Minnesota Supply Company,** 802 Pioneer building, St. Paul, Minn., has been appointed its northwest sales representative, and the business is in charge of **W. H. Hooper,** who has been engaged in the railway work and the railway supply field for the past 25 years.

The American Iron & Steel Corp., with executive offices at Cleveland, has been chartered recently in the state of Delaware and is sponsored by interests identified with the steel industry in the Cleveland, Pittsburgh and Michigan district. The new concern will build a steel plant on a site with about two miles of Lake Michigan frontage just west of Michigan City, Ind., at a cost between $5,000,000 and $10,000,000.

William D. Ennis has resigned as professor of marine and mechanical engineering in the Post Graduate Department of the United States Naval Academy, to become vice-president of the **Technical Advisory Corporation,** New York. Mr. Ennis has been associated with the latter corporation since its organization, and will be hereafter located at its general offices, 132 Nassau street, New York.

M. O. Leighton, chairman of the National Public Works Department Association, **Major C. T. Chenery,** secretary of that association, and **A. C. Oliphant,** of the Washington office of Engineering Council, have formed a co-partnership in the name of **M. O. Leighton Company,** with office at 700 Tenth street, Washington, D. C., for the purpose of engaging in general engineering practice and industrial representa-

tion before the federal departments. These men will retain their connection with their respective associations, pending the displacement of Engineering Council by the Federated American Engineering Societies.

The Roller-Smith Company, New York, announces recent changes in its sales organization as follows: **G. L. Crosby,** sales manager, has been appointed general sales manager at New York; **M. Frankel,** assistant sales manager, is now western sales manager at Chicago; **W. J. Shire,** sales engineer, is now eastern sales manager, New York; **C. G. Kahant,** a sales engineer, is now export manager and district sales manager, New York; **F. R. Ryan, J. E. Wood** and **H. D. Baker** remain district sales managers, respectively, of the Chicago, Cleveland and Detroit territories, and in addition to the above **C. M. Hunt** is a sales engineer in the New York office and **M. B. Mathley** is a sales engineer in the Chicago office.

Charles P. King, formerly manager of the New York office of the Lima Locomotive Works, Inc., and who, for several years previously, traveled in the West Indies and Central and South American countries for the same corporation, on July 15 assumed charge of the car business of the **Ralston Steel Car Company,** Columbus, Ohio, as eastern sales and export representative at the offices of the **Ralston Car Sales Corporation,** the selling agent for the Ralston Steel Car Company, 2 Rector street, New York. Mr. King received his preliminary training in the car building business in the shops and offices of the old Jackson & Sharp Car Company, Wilmington, Del., under the direction of his father, A. M. King, who was, for many years, until his death in 1897, general superintendent of that company. Mr. King returns to the railroad field after a brief venture in the export trade paper publishing business.

F. C. Lavarack, who is president of the newly organized **Railroad Accessories Corporation,** New York, as was announced in the *Railway Age* of July 9, was born in 1883, in England, and came to the United States in 1897. He entered the service of the Standard Signal Company in 1900, and later served as chief draftsman with the same company. He then was with the New York Central in the signal department, and subsequently went to the Federal Signal Company as chief draftsman, later becoming assistant resident engineer with that company at Chicago. In 1907 he was appointed an assistant to the signal engineer on the electric zone of the New York Central, and then became director of instruction of the School of Railway Signaling at Utica. He subsequently was signal engineer with the Federal Signal Company, New York, and in 1912 formed the Signal Accessories Company, of which he was vice-president. He later organized the Duplex Channel-Pin Company and the Signal Construction Company, of both of which he is president. He is the author of "Locking," an elementary work on mechanical interlocking, published in 1907.

F. C. Lavarack

The Protexol Corporation, 34 Barclay street, New York, announces that it has bought all the assets and property, including franchises, patents, trade-marks and copy-rights of the Carbolineum Wood Preserving Company, and will continue the business under the name Protexol Corporation, successors to Carbolineum Wood Preserving Co. **Ernest F. Hartman,** president of the Protexol Corporation, has been president of the Carbolineum Wood Preserving Co. since its incorporation, and is authority on the subject of wood preservation and wood preserving materials. **John N. Schlude,** treasurer of the new corporation, has been secretary and treasurer of the Carbolineum Wood Preserving Company since its incorporation; **Ross M. Whitbeck,** secretary of the new corporation, had been connected with the Carbolineum Company as sales manager for many years. **Fred Jaeger,** manager of the export department, had been in charge of the export department of the Carbolineum Company since 1915. **Edwin F. Paddock,** chemist and engineer, is in charge of the laboratory and manufacturing, and had been with the Carbolineum Company in a like capacity for nine years. The Carbolineum Wood Preserving Company, prior to the war had the exclusive U. S. rights to the trade names Carbolineum and Avenarius Carbolineum, but some time ago discontinued the use of these foreign trade names and adopted for its product the name Protexol wood preservative, a trade name coined by itself and protected by U. S. trademark registration. The Protexol Corporation, in succeeding to the business of the Carbolineum Wood Preserving Co., has erected an extensive coal tar products plant at Kenilworth, N. J. The Carbolineum Company had confined itself to the manufacture and sale of but one product, Protexol wood preservative; the Protexol Corporation is manufacturing a complete line of coal tar products, including four grades of wood preservatives, namely Protexol, Anolineum, Neosote and Creosote, also shingle oils, carbolic and cresylic acid and acid oils, black preservative varnishes, roofing paints, detergents, disinfectants, sheep dips and weed killers. The general office of the corporation is at 34 Barclay street, New York.

Obituary

Edward A. Schreiber, general manager of the **Vapor Car Heating Company,** Railway Exchange building, Chicago, died on July 4 from heart trouble, following a previous attack on May 20, just after his return from a European trip in the interest of the car heating company. Mr. Schreiber was formerly connected with the steam fitting department at the Pullman car works, and in 1901, entered the service of the Chicago Car Heating Company, predecessor of the present Vapor Car Heating Company, since which time, and up to his death, at the age of 58, he was active in the affairs of that company.

Trade Publications

THE DUFF MANUFACTURING COMPANY, Pittsburgh, Pa., has just issued a 12-page illustrated bulletin known as No. 303 describing the line of Duff trip jacks manufactured by this company. This publication includes a complete description of the various styles and sizes of jacks used for constructing, surfacing, ballasting and repairing of railroad track.

LATERAL MOTION DRIVING BOX.—Means for increasing the capacity of narrow gage locomotives by the use of the Franklin lateral motion driving box and the Economy engine truck are described in bulletin 77, a four-page pamphlet issued by the Franklin Railway Supply Company, New York. These devices permit the use of an extra pair of driving wheels, with a corresponding increase in the tractive power of the locomotive. A line drawing shows the arrangement of the box and flexible side rods.

GREETINGS FROM THE TEXAS COMPANY.—A small booklet entitled "Howdy" was issued by the Texas Company, New York, to delegates attending the American Railroad Association Convention, Sections 3 and 6, at Atlantic City. The booklet acquainted convention delegates with some pertinent facts regarding the Texas Company and a description of railroad lubrication was given by George L. Noble, vice-president and general manager, the railroad sales department. Conditions in the New York and Chicago fields were described by the respective department managers. Attention was called to the provision in some localities for spray oiling the rails in order to prevent corrosion and rust, using a specially designed car for this purpose. The last few pages of the booklet give a brief but interesting account of the activities of the Texas Company outlining the fields covered by the different departments.

Railway Financial News

CHICAGO & NORTH WESTERN.—This company has filed a $500,000,000 mortgage at Council Bluffs, Neb., in favor of the Farmers' Loan & Trust Company of New York. It is for the purpose of refunding all the company's outstanding indebtedness with the exception of $165,000,000 secured by previous mortgages.

DETROIT, TOLEDO & IRONTON.—Fosburgh, Pratt & Osborn, management firm of New York, on July 13 announced the details of the sale of this railroad to Henry Ford. The statement reads, in part:

"The control of the road was taken over by Mr. Ford on Friday last by the purchase for cash of approximately 97 per cent of the adjustment mortgage bonds and the preferred and common stock. The price paid was $600 for each $1,000 bonds, and $5 and $1 for each share of the preferred and common stock, respectively.

"This road underwent a drastic reorganization in 1914, when it was taken over by the first mortgage bondholders and the holders of receivers' certificates. About a million dollars of new money was then provided to improve the condition of the property. Frederick Osborn, of this firm, was retained by the larger security holders to represent them in the management of the property. Early this year it became evident that improvement of this road was a vital necessity to Detroit, and it was through the efforts of Mr. Osborn to raise capital for the road from the larger industries of Detroit that the sale to Henry Ford was brought about.

"For the immediate future a program of large purchases of heavy rails, ballasting, construction of cutoffs and elimination of grades has been adopted and will be put into effect at once, and the capital thus provided by this automobile industry for the development of this Detroit road will enormously relieve the serious rail congestion which has existed in Detroit for some years past."

A statement by the Ford interests, announcing the purchase, says: "Mr. Ford, for some time past, has been devoting much of his time to a fundamental study of the engineering and mechanical problems involved in railroading, and, with the large means at his disposal and his own genius along lines of large production, interesting developments may well be looked for."

GRAND TRUNK.—Former President of the United States William H. Taft has been appointed to represent the Grand Trunk system on the board of arbitration that is to determine the amount to be paid by the Canadian government for the stock of the corporation. The other members of the board are Sir Walter Cassels, chief judge of the Exchequer Court, who will be chairman, and Sir Thomas White, representing the Canadian government. The sittings of the board of arbitration will be held at Montreal beginning in September.

Under legislation passed last year at Ottawa the Canadian government agreed to assume the bonded indebtedness of the Grand Trunk system and its outstanding debenture stock and to pay the shareholders, most of whom live in Great Britain, an arbitrated price for their common and preferred stock.

TOLEDO TERMINAL RAILROAD.—The board of referees appointed by the Interstate Commerce Commission has decided that this company is entitled to compensation at the rate of $252,999.43 a year for the use of its property by the government during the period of federal control. The company had not made a contract with the Railroad Administration and it claimed it was entitled to compensation at the rate of $495,000.

WESTERN MARYLAND.—This company has applied to the Interstate Commerce Commission for an order authorizing the issuance of $6,000,000 of five-year 7½ per cent convertible notes for the purpose of refunding and retiring $1,000,000 of notes of the Coal and Iron Railway maturing August 1 and $5,000,000 of three-year notes of the Western Maryland maturing November 1.

Railway Officers

Executive

James G. Corbett, who has been appointed assistant to the president of the Central of Georgia, with headquarters at Savannah, Ga., as noted in the *Railway Age* of July 2 (page 45), was born at Wilmington, N. C., on March 14, 1879. He was educated at the Cape Fear Academy and began railroad work in 1894 as a stenographer and clerk in the office of the freight claim agent of the Atlantic Coast Line at Wilmington, N. C. From April, 1897, to September of the same year, he held a similar position on the Central of Georgia, at Savannah, Ga. He then became secretary to the traffic manager of the Central of Georgia and the Ocean Steamship Company at Savannah, which position he held until October, 1901, when he was made secretary to the assistant general freight agent of the Central of Georgia. From June, 1902, to September, 1907, he served as secretary to the vice-president and traffic manager and vice-president of the same road at Savannah. In September, 1907, to the time of his recent promotion, he has served as chief clerk to W. A. Winburn, who has been respectively vice-president, president, federal manager and president of the Central of Georgia.

Financial, Legal and Accounting

Carl L. Peckham and **Arthur Latham** have been appointed assistant auditors on the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, effective July 1.

Operating

Arthur J. Carr, chief despatcher on the Northern Pacific, with headquarters at Glendive, Mont., has been transferred to the Montana division, succeeding **H. T. Riggs,** assigned to other duties, effective July 6.

Victor B. Fisher, who has been appointed general superintendent of the Philadelphia & Reading, with headquarters at Reading, Pa., as noted in last week's issue of the *Railway Age*, was born at Allenwood, Pa., on July 8, 1867. After receiving a high school education, he began railway work in the spring of 1882, as a messenger on the Philadelphia & Reading, and in the fall of the same year he became a telegraph operator on that road. In 1885 Mr. Fisher was appointed train despatcher, holding this position until May, 1890, when he went to the New York Central as yardmaster. The following December he returned to the service of the Philadelphia & Reading as train despatcher and in September, 1897, was appointed assistant trainmaster, with office at Tamaqua, Pa. In February, 1913, he was promoted to trainmaster, serving in this capacity until February, 1918, when he was appointed superintendent of the Shamokin division, which position he held at the time of his recent appointment.

V. B. Fisher

E. Richards, superintendent of safety of the St. Louis Southwestern, with headquarters at Mt. Pleasant, Tex., has been appointed superintendent of telegraph, with headquarters at Tyler, Tex., effective July 1.

Traffic

C. H. Guion has been appointed assistant general freight agent of the Gulf Coast Lines, with headquarters at Houston, Tex., effective July 1.

The freight traffic department of the Pennsylvania announces that **H. W. Whittaker,** Philadelphia, Pa., has been appointed chief of tariff bureau, for the Eastern Region and that part of the Central Region east of Pittsburgh, Oil City and Erie; and **R. H. Smith,** Pittsburgh, Pa., for the Central Region west of Pittsburgh, Oil City and Erie, and for the Northwestern and Southwestern Regions.

Mechanical

C. B. Young, mechanical engineer of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been promoted to general mechanical engineer, with the same headquarters, effective June 16. **E. C. Anderson,** acting mechanical engineer, with headquarters at Chicago, succeeds Mr. Young.

A. T. Pfeiffer has been appointed assistant superintendent of fuel and locomotive performance on the New York Central, with headquarters at New York City. **Robert McGraw** has been appointed fuel instructor, with headquarters at Syracuse, N. Y. **J. C. Brennan** has been appointed supervisor of fuel and locomotive performance of the First district, with headquarters at Utica, N. Y. **C. W. Wheeler** has been appointed supervisor of fuel and locomotive performance of the Second district, with headquarters at Syracuse, N. Y., succeeding **L. F. Burns.**

Engineering, Maintenance of Way and Signaling

C. L. Spaulding has been appointed district engineer of the Eastern district of the New York Central, effective July 1. This district has been extended to include the electric zone, exclusive of the Grand Central Terminal.

B. S. Voorhees, district engineer of the New York Central, has been promoted to the position of general office engineer of the New York Central Lines, on the staff of George A. Harwood, assistant to the president, effective July 1.

Francis J. Meyer, roadmaster of the New York, Ontario & Western, with headquarters at Walton, N. Y., has been promoted to assistant engineer, with headquarters at Middletown, N. Y., succeeding **R. W. Canfield,** who has resigned to enter other business.

John Lansdale, whose appointment as valuation engineer of the Southern Pacific Lines in Texas and Louisiana, with headquarters at Houston, Tex., was announced in the *Railway Age* of June 18 (page 1958), was born on June 24, 1882, at Triadelphia, Md. Mr. Lansdale entered railway service in the engineering department of the Tonopah & Goldfield in May, 1906. From 1906 to 1910 he served in the maintenance and construction departments of this road. In February, 1910, he was appointed assistant engineer of the Southern Pacific, with headquarters at San Francisco, Cal. In July, 1912, he was appointed assistant engineer of the Los Angeles & Salt Lake and in March 1913, was appointed assistant engineer and valuation engineer of the Pacific Electric railway and other electric railway properties of the Southern Pacific in California. From September, 1917, to July, 1919, he was with the American Expeditionary Forces in France, serving as a captain and later as a major of engineers. In December, 1919, he returned to the engineering department of the Southern Pacific at Houston, Tex., remaining there until his recent appointment.

Railroad Administration

Victor K. Hendricks, formerly assistant chief engineer of the St. Louis-San Francisco, has been appointed regional engineer of the Southwestern region, with headquarters at St. Louis, Mo., effective July 1, succeeding Horace Stringfellow, transferred to Washington as regional engineer of the Southern and Pocahontas regions.

Obituary

Pearl Wight, formerly receiver of the Texas & Pacific, died in New Orleans, La., on July 5.

G. K. Andrews, commissioner of agriculture for the Missouri Pacific, with headquarters at St. Louis, Mo., died in that city on July 10.

John F. Hogan, transportation expert of the Wisconsin Railroad Commission and a member of that body since its organization in 1905, died suddenly at his home at Madison, Wis., on July 7.

James C. Peasley, formerly vice-president and treasurer of the Chicago, Burlington & Quincy, with headquarters at Chicago, died in Chicago on July 13, at the age of 80 years. Mr. Peasley was born on March 30, 1840, in Henderson County, Ill. He entered railway service as an agent with the Burlington at Ottumwa, Ia., in 1862. One year later he was promoted to assistant treasurer, a position he held for the next three years, when he became cashier of the National State Bank at Burlington, Ia. In 1869 he was appointed president of the Burlington & Missouri, a position he held until 1881, at which time he was appointed vice-president and treasurer of the Chicago, Burlington & Quincy, which position he held until he retired in February, 1902.

Albert D. Bethard, formerly vice-president and general manager of the Missouri, Kansas & Texas, with headquarters at Dallas, Tex., died at his home, in Dallas, on July 12. Mr. Bethard was born October 24, 1855, at Bushnell, Ill. He entered railway service with the Rockford, Rock Island & St. Louis (now a part of the Chicago, Burlington & Quincy) as a telegraph operator in 1871 and was later promoted to train despatcher at Rock Island, Ill. From 1876 to 1881 he served with the St. Louis, Iron Mountain & Southern as operator, despatcher and trainmaster. Upon the latter date he was appointed trainmaster on the Richmond & Allegheny and not long after was promoted to superintendent of telegraph. In December, 1888, he was appointed trainmaster of the Missouri, Kansas & Texas, with headquarters at Denison, Tex., and was later promoted to division superintendent. He was promoted to superintendent of car service in May, 1901. In June of the same year he became superintendent of car service of the entire system, and in July, 1904, was appointed superintendent of transportation. One year later he was promoted to assistant general manager, a position he held until June, 1910, when he was promoted to vice-president and general manager, which position he held until 1913.

Wallace G. Collins, formerly general manager of the Chicago, Milwaukee & St. Paul, died in Seattle, Wash., on July 12. Mr. Collins was born on November 21, 1851, at Oconomowoc, Wis. He entered railway service with the Chicago, Milwaukee & St. Paul, in 1867. Three years later he became telegraph operator on the Northern Pacific and was later promoted to train despatcher. From 1872 to 1873, he was with an engineering corps on the Canada Southern. On the latter date he returned to the Chicago, Milwaukee & St. Paul as assistant despatcher and four years later he was promoted to chief train despatcher and superintendent of the La Crosse and Wisconsin Valley division, which position he held until 1889, when he was appointed assistant to the general superintendent. He was promoted to general superintendent in 1891 and seven years later became general manager. In February, 1900, he was appointed vice-president and general manager of the Marinette, Tomahawk & Western, which position he occupied until 1904. On April 1, 1905, he left the St. Paul to become president of the Chicago Warehouse and Terminal Company and vice-president of the Illinois Tunnel Company. Recently he had been engaged in the lumber business of the Northwest.

THE CHESAPEAKE & OHIO VETERAN EMPLOYEES' ASSOCIATION has postponed until September its fourth annual meeting, which was scheduled to be held at White Sulphur Springs on July 17.

ELECTRIC POWER has been substituted for steam to operate the two immense fans employed to rid the Chesapeake & Ohio Railroad tunnel at Big Mound, W. Va., of gas and smoke.